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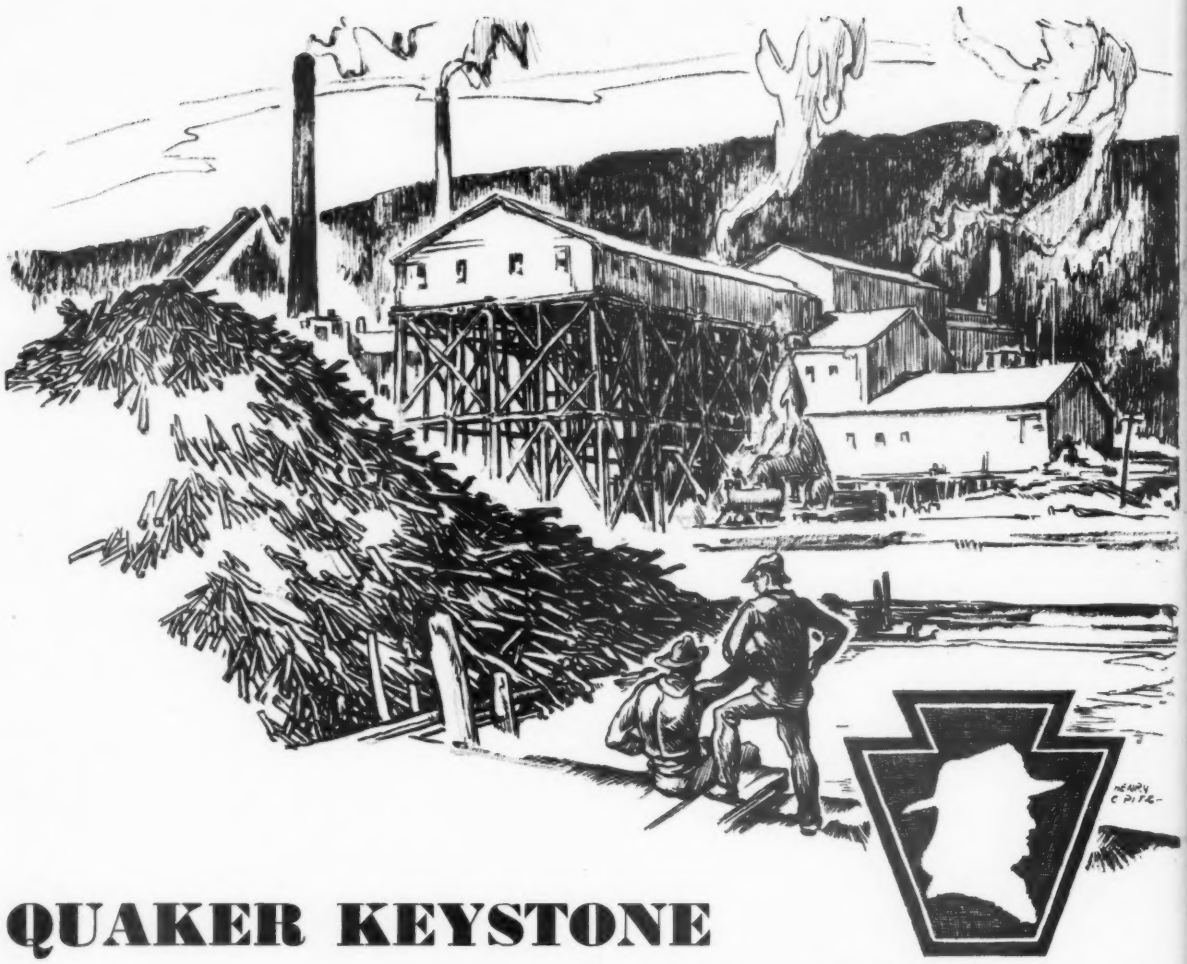
PACIFIC PULP & PAPER INDUSTRY

APRIL 1936



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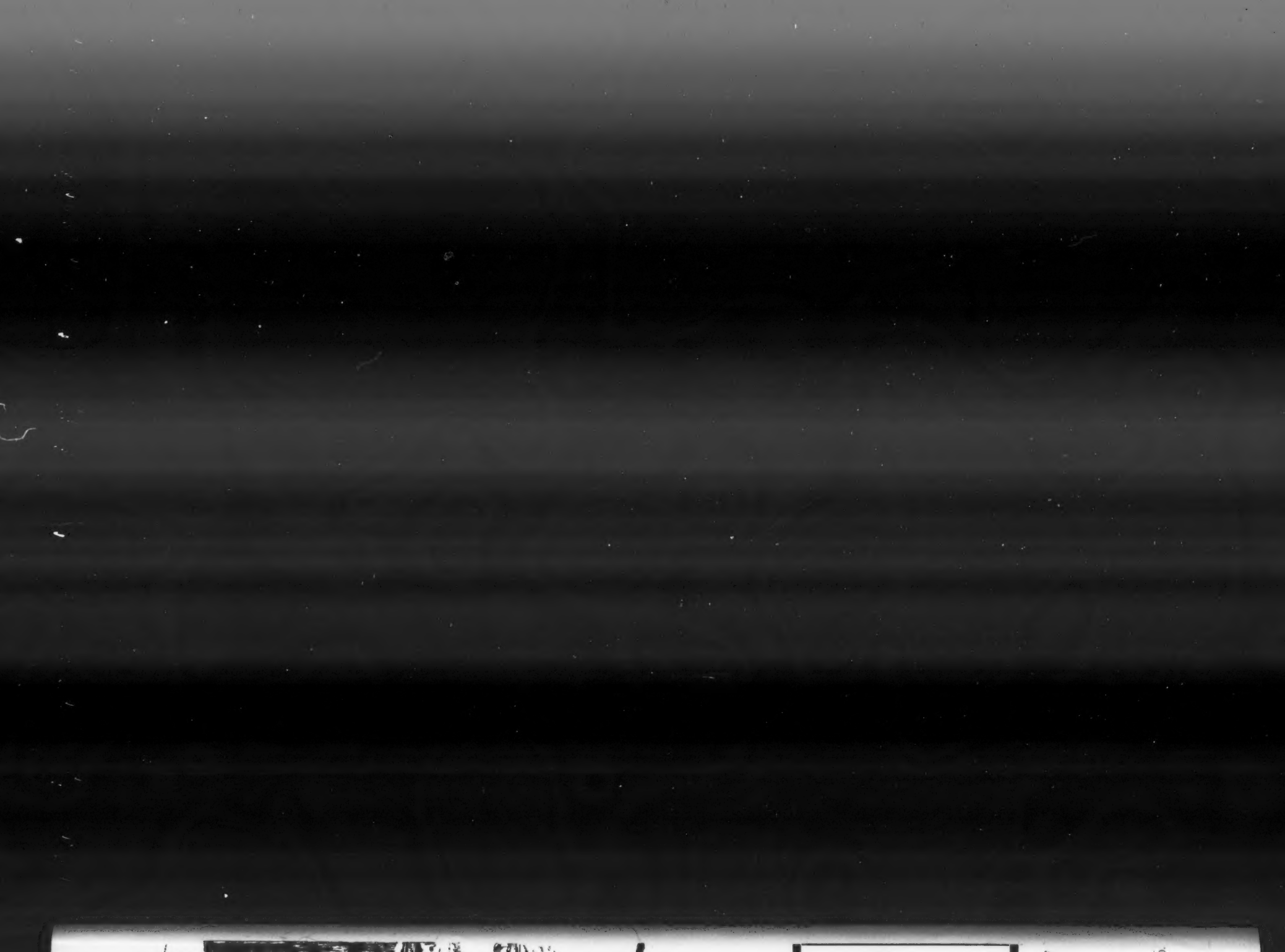

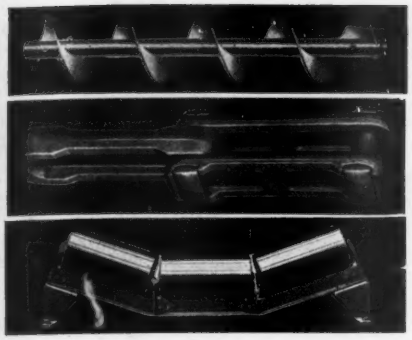

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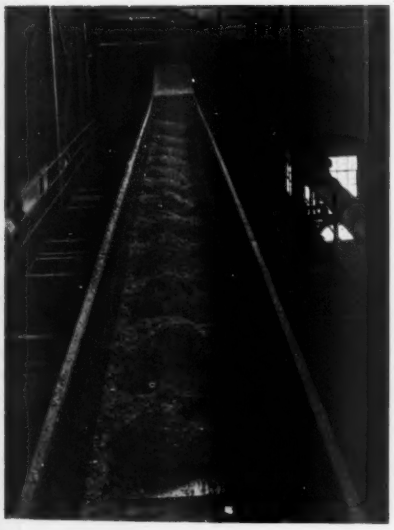

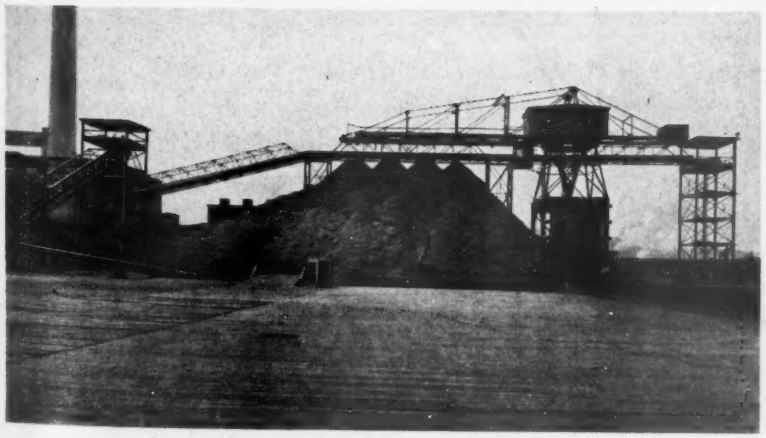

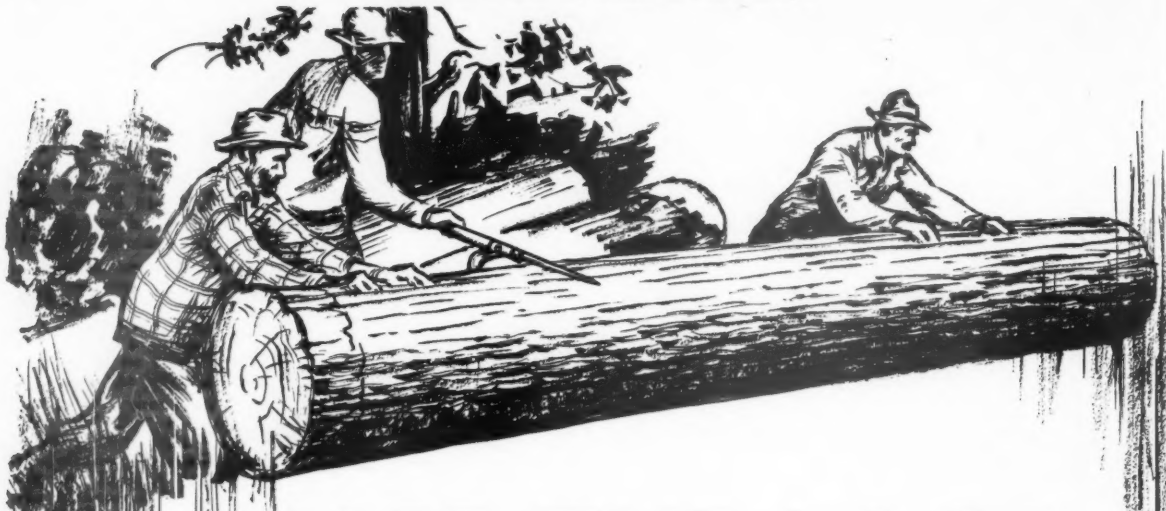

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APRIL • 1936

TAPPI DISCUSSES—

PULPWOOD PREPARATION
FOREST RESEARCH
PULP BLEACHING

The two recent dinner meetings of the Pacific Section of TAPPI brought forth much of interest to the industry on the Pacific Coast. On Tuesday evening, March 24th, a dinner meeting was held at the Multnomah Hotel in Portland, Oregon, attended by some sixty men. The Olympia, Washington, meeting was held at the Hotel Olympian Tuesday evening, April 7th, and one hundred and seven were present.

Mr. Carl Fahlstrom, technical superintendent of the Longview Fibre Company, and vice-chairman of the Pacific Section of TAPPI, served as toastmaster at Portland. As the first speaker Mr. Fahlstrom introduced Dr. J. Elton Lodewick of the Pacific Northwest Forest Experiment Station, Portland, Oregon, a division of the United States Forest Service.

Dr. Lodewick spoke on "Forest Research and the Pulp Industry in the Pacific Northwest."

The second speaker introduced by Mr. Fahlstrom was Mr. Clark Lewis, Pulp Division, Weyerhaeuser Timber Company, Longview. Mr. Lewis's subject was "Pulpwood Preparation in the Pacific Northwest."

Dr. Kenneth A. Kobe of the Department of Chemistry of the University of Washington spoke briefly on the design of the new chemistry building now under construction at the University and explained how it would be equipped to permit fundamental research on a semi-plant scale of major problems affecting the pulp and paper industry on the Pacific Coast.

Two prominent guests from Germany were present, Dr. Hellmuth Muller-Clemm, technical director of the large Zellstoff-Fabrik Waldhof of Mannheim, Germany, and Dr. C. A. Schenck, late director of the Biltmore School of Forestry, now living in Darmstadt, Germany.

Mr. Fahlstrom called on Dr. Schenck who responded with remarks which brought laughter and applause from the TAPPI men. Dr. Schenck said the first time he came to the United States was in 1894, when he went to work for the United States Forest Service in North Carolina. In 1909 he made his first trip to the Pacific Coast and that ever since he had thought it was the finest part of the United States. Both Columbus and himself, Dr. Schenck remarked, had made the same error. They both had discovered America from the East coast. Next time America is discovered, Dr. Schenck told TAPPI, it will be from the West Coast.

Dr. Muller-Clemm said he had made numerous trips to the Pacific Coast and had watched the pulp and paper industry grow to its present importance. He brought greetings to TAPPI from the German Technical Association of the Pulp and Paper Industry of which he is the head. He spoke briefly of Germany's raw material problem, the necessity for importing more than sixty per cent of all pulpwood, and he added that the Pacific Coast industry was very fortunate to have such a great reserve of suitable pulpwood close to the mills.

A vote of thanks was given to Mr. H. A. Des Marais, secretary-treasurer of the Pacific Coast Division of the American Pulp & Paper Mill Superintendents' Association, who made all arrangements for the Portland dinner meeting.

The Olympia Meeting

A symposium on pulp bleaching was announced as the program for the Olympia dinner meeting of TAPPI, Tuesday evening, April 7th, and the subject drew a record crowd for a dinner meeting.

Mr. Fred Shaneman, who arranged the Olympia dinner, brought with him the toastmaster par excellence, Mr. Scott Henderson, prominent Tacoma attorney, who enlivened the meeting with his witty stories and remarks. Mr. Henderson was toastmaster of the first TAPPI dinner ever held on the Pacific Coast and is well known to most all members of the organization.

The first speaker introduced by Mr. Henderson was Mr. E. J. Hanzlik, associate forester, United States Forest Service, with headquarters in Olympia. Mr. Hanzlik spoke on "Amount, Growth and Yield of Pulp Species on the Olympic Peninsula."

Following Mr. Hanzlik, Mr. Albert H. Hooker, Jr., of the Hooker Electrochemical Company, Tacoma, opened the symposium on bleaching with a paper entitled, "Notes on Pulp Bleaching Practice." He was followed by Mr. Tom E. Moffitt, also of the Hooker organization, who spoke on "The Hooker Continuous Chlorination System." Both papers are published in this article.

A paper entitled "Pulp Bleaching" by Dr. W. Hirschkind, vice-president in charge of research of the Great Western Electrochemical Company of San Francisco, was read by Mr. Earl G. Thompson, northwest representative for Great Western, as Dr. Hirschkind was unable to be present. Mr. Thompson also read a paper, "Simplified pH Measurement," by Mr. David J. Pye, research chemist of the Great Western Electrochemical Company. Both papers follow in this article.

Mr. Brian Shera, assistant superintendent of the Pennsylvania Salt Manufacturing Company of Washington, Tacoma, read his paper on the bleaching of sulphate pulp, entitled "Experimental Studies on the Bleaching of West Coast Sulphate Pulp," which is printed below.

Discussion followed the presentation of the papers.

Mr. Roger E. Chase of Tacoma remarked that it was a pleasure to see Mr. A. D. (Dad) Wood present at the meeting and to know that he was well on his way toward complete recovery from the serious injuries he received in an automobile accident last October. Mr. Henderson called on Mr. Wood, who is superintendent for the Shaffer Pulp Company in Tacoma. "Dad" Wood, as he is affectionately known to pulp and paper makers throughout the continent,

responded, saying he was very glad to be able to again attend TAPPI meetings. He expressed his appreciation for the telegram sent by the TAPPI meeting in Seattle last October when he was in the hospital, wishing him speedy recovery, and, too, for the many friends who had stopped in to see him.

A vote of appreciation was given to Mr. Fred Shaneman, who had charge of arrangements for the dinner meeting, for his successful work.

Mr. Carl Fahlstrom, as vice-chairman of the Pacific Section of TAPPI, is in charge of obtaining the papers for the programs. He was assisted in this work by Mr. Earl G. Thompson, secretary-treasurer of TAPPI, who also is responsible for notifying the members of the meetings and creating interest in the programs.

The following men attended the dinner meeting in Portland:

Leslie L. Anderson, Longview; E. H. Barton, Longview; Charlie Belvin, Portland; R. Bingham, Portland; Carl Blom, Portland; Carl E. Braun, Oregon City, Ore.; G. S. Brazeau, Everett; R. S. Carey, Portland; Emro E. Davis, Longview; H. A. Des Marais, Portland; R. E. Drane, St. Helens, Ore.; Carl Fahlstrom, Longview; Harry S. Fisher, Longview; J. D. Fraser, Everett; W. L. Gooding, Longview; Harold G. Griep, Longview; Richard N. Hammond, Longview; John E. Hassler, Portland; R. S. Hatch, Longview; H. A. Hauff, Longview; B. F. Heintzleman, Portland; H. R. Heuer, Longview; Walter S. Hodges, Portland; Jack Johnson, Oregon City; L. T. Johnson, Oregon City; W. A. Kelly, Portland; W. N. Kelly, Longview; Kenneth S. Kobe, Seattle; Dr. E. C. Lathrop, Camas, Wash.; Clark Lewis, Longview; J. Elton Lodewick, Portland; G. H. McGregor, Longview; Ned Menzies, Seattle; G. F. Mitchell, Portland; C. W. Morden, Portland; Dr. H. Muller-Clemm, Germany; F. G. Odom, Oregon City; F. A. Olmsted, Camas, Wash.; Harry L. Potter, Portland; W. A. Prier, Portland; H. H. Richmond, Portland; Dr. C. A. Schenck; Harlan Scott, Seattle; Brian Shera, Tacoma; D. L. Shirley, Portland; R. A. Sipes, Oregon City, Ore.; C. V. Smith, St. Helens; Paul J. Thiess, Longview; H. A. Vernet, Portland; Fred J. Weleber, Oregon City, Ore., and Edward P. Wood, Longview.

Those attending the dinner meeting in Olympia:

Warren Arnold, Longview; Jerry Alcorn, Everett; Fred R. Armbruster, Longview; Olavi Aho, Hoquiam; Leslie L. Anderson, Longview; C. E. Ackley, Hoquiam; Dr. H. K. Benson, Seattle; J. R. Bruckart, Olympia; C. H. Belvin, Portland; G. C. Brewster, Shelton; Homer H. Best, Longview; H. A. Baulig, Longview; B. A. Bannan, Seattle; W. V. Beuschlein, Seattle; W. E. Breitenbach, Hoquiam; G. S. Brazeau, Everett; A. W. Berggren, Tacoma; R. E. Chase, Tacoma; John M. Carlson, Everett; N. W. Coster, Everett; J. V. B. Cox, Portland; William W. Clarke, Longview; E. F. Drake, Port Townsend; A. C. Dunham, Portland; R. E. Drane, St. Helens, D. L. Erickson, Longview; Carl Fahlstrom, Longview; Jas. P. V. Fagan, Anacortes.

Harold T. Fretz, Port Angeles; Harry Fromong, Portland; O. W. Greenwalt, Shelton; M. M. Griffith, Tacoma; A. Gustin, Hoquiam; N. O. Galteland, Tacoma; E. J. Hayes, Tacoma; J. H. Handley, Longview; R. N. Hammond, Longview; H. A. Hauff, Longview; W. S. Hodges, Portland; L. L. Hoff, Tacoma; Svarre E. Hazlequiet, Longview; E. J. Hanzlik, Olympia; Albert Hooker, Tacoma; Scott Z. Henderson, Tacoma; R. S. Hatch, Longview; H. R. Heuer, Longview; J. W. Ingersol, Tacoma; Lester M. Johnson, Longview; L. T. Johnson, Oregon City; Wm. Kelly, Longview; W. A. Kelly, Portland; W. E. Kaphingst, Shelton; Kenneth A. Kobe, Seattle; John O. Kjome, Seattle; Geo. H. Krueger, Seattle; Brennan Keller, Longview; Errol Hay Karr, Tacoma; John Koseivlek, Oregon City; G. M. Kirkpatrick, Longview; N. A. Lewthwaite, Port Townsend; Ted R. Lindsey, Longview; H. W. Leonard, Winlock, Wn.

Clark Lewis, Longview; T. E. Moffitt, Tacoma; T. H. Moran, Longview; E. J. McGill, Hoquiam; Jack Martin, Seattle; John C. Mannion, Hoquiam; C. T. Mulledy, Port Angeles; D. K. MacBain, Longview; G. H. McGregor, Longview; John W. Natwick, Port Townsend; Berner M. Nelson, Longview; H. D. Norris, Tacoma; W. M. Osborne, Tacoma; M. M. Peterson, Longview; Ted P. Piern, Oregon City; G. V. Palmrose, Longview; Paul A. Pittenger, Longview; A. S. Quinn, Seattle; A. J. Rosengath, Tacoma; Don L. Ross, Tacoma; Edward F. Riley, Seattle; Steve Rupert, Port Angeles; Rex H. Russell, Longview.

Fred Shaneman, Tacoma; Brian Shera, Tacoma; Geo. C. Schmidt; Larry K. Smith, Seattle; James T. Sheehy, Hoquiam; Otto H. Sangder, Hoquiam; Arlo C. Sillman, Longview; A. P. Siebers, Longview; Harlan Scott, Seattle; H. V. Tartar, Seattle; Earl G. Thompson, Seattle; Preston Varney, Longview; Graham R. Vernig, Longview; Russell O. Vognild, Tacoma; Bill Williamson, Portland; R. S. Wertheimer, Longview; John M. Wilcox, Longview; J. A. Wilcox, Longview; A. D. Wood, Tacoma; Edward P. Wood, Longview; N. T. Widmann, Port Angeles.

H. A. DES MARAIS
In Charge of Arrangements for Portland Meeting

CARL FAHLSTROM
Vice-Chairman Pacific Section of TAPPI in Charge of Programs

NOTES ON PULP BLEACHING PRACTICE

By ALBERT H. HOOKER, Jr.*

Bleaching is the whitening of cellulose by chemical treatment.

Pulps normally bleached by chlorine in chemical composition include sulphite, sulphate, soda, manila, jute, cotton rags, and old papers.

Reducing agents, generally sulphur dioxide in combination, find some use in brightening groundwood and occasionally other pulps.

Time necessitates omitting the fascinating history of the development of the alkali and chlorine industries. Thirty-five years ago practically all United States bleaching materials came from England. Now there is ample production in this country to supply all of its requirements.

My activities in the chlorine industry have been continuous since 1908, except for school, college and army. There is absolutely no resemblance between chlorine plants of 28 years ago and the modern plants at Tacoma. In the early days we required boots, and a gas-mask much of the time, and there was continuous grief.

Since 1920 most of my time has been spent on bleaching problems in American and Canadian mills. Fifteen years ago practically all pulp bleaching was at low density, single stage,—using a bleaching powder solution. The bleach mixing department was generally neglected, dirty, and unhealthy, with excessive losses. Tremendous economies were made through effective handling, dissolving and recovery of bleaching powder. Fifteen years ago there were only several men doing all of the bleach service work in the pulp, paper and textile mills. Now the woods are full of real bleaching experts.

The World War requirements for liquid chlorine developed its production, and suitable drums and tank cars for its transportation. This resulted in the pulp and paper mills shifting from the use of bleaching powder to liquid chlorine and lime, extending over a period of nearly ten years. This transition often included the intermediate step of chlorinating the excess lime in a bleaching powder solution. These changes necessitated a careful study of local conditions at each mill, with each installation made to utilize existing tanks and equipment without any interruption of the mill operation.

Eight years ago bleaching powder was in general use in all the Northwest mills. With experience gained in the east it was not a difficult problem to convert all of these mills to the use of chlorine and lime. All new mills built since then were laid out for liquid chlorine.

As soon as a mill was economically making a uniform bleach liquor the activities of chlorine service engineers shifted to bleaching problems. Recent developments in bleaching practice will be discussed by others this evening.

Several years ago when chlorine and pulp production was at a low ebb, extensive research was undertaken to bleach

*Hooker Electrochemical Company, Tacoma, Washington.

ALBERT H. HOOKER, Jr.
Hooker Electrochemical Co., Tacoma

sulphate in an effort to provide an increased outlet for chlorine since bleached sulphate uses approximately three times as much chlorine as bleached sulphite. As the demand for chlorine increased there developed a surplus of caustic soda. Now we are seeking additional outlets for caustic soda in the pulp mills. Some caustic is used in pH control in bleaching, but not enough, so chlorine manufacturers are now especially glad to cooperate with pulp mills desiring large quantities of caustic soda in the manufacture of high grade pulp cellulose.

The Joint Committee on Vocational Education of the Pulp and Paper Industry of the United States and Canada has published 5 text books on "Modern Pulp and Paper Mill Practice." I collaborated with H. H. Hanson in writing the text on bleaching for volume III, "Manufacture of Pulp," first published in 1927. To supplement my knowledge of bleaching practices on this continent, I made an extended trip studying bleaching operations in pulp mills in England, Norway, Sweden, Finland and Germany.

Hugo Hanson and I have just completed the revision of our chapter on "Bleaching and Purifying Pulp" for volume III which will probably be available within several months. The remarkable development in bleaching operations and equipment during the past decade necessitated the complete revision of this chapter, with much new, additional information, including chlorine control, pH control, slime control, bleaching and washing equipment, acid and alkali resistant materials, multi-stage bleaching and kraft bleaching.

Several articles recently appeared in the Paper Industry on the subject of bleaching, and the following are brief references to these:

Elledge discussing the "Properties of Chlorine" states: "An undertsanding of the nature of the chlorine bleaches made by the various procedures eliminated a good deal of the questioning as to whether the ligninous materials contained in the pulp being bleached are chlorinated or oxidized, chlorinated by addition or by substitution, or bleached by the several reactions going on simultaneously. The hypochlorite ion, "OCl', is the same in all. The only important variable aside from concentration and temperature seems to be the condition of acidity or alkalinity."

"Water considerations in Pulp Bleaching" by De Vane Hamilton of the Weyerhaeuser Longview Pulp Mill is an excellent paper including practical suggestions for sources, treatment and use of water. Hamilton states that: "Since the quality of bleached pulp is dependent to a great extent upon the washing process, it follows that non-uniform water will give non-uniform pulp."

Savell's article on "Chlorine Handling and Bleach Making Equipment" brings valuable information to all chlorine users, with details of bleach liquor preparation, and a discussion of difficulties in chlorine lines due to lubricants, moisture and heat. Savell also explains the necessity for safety valves on chlorine tank cars, and fusible plugs on chlorine cylinders and drums; and the necessity for expansion gas chambers on every liquid chlorine pipe line.

The National Safety Council bulletin on "Chlorine" includes detailed suggestions for the safe handling of chlorine, and instructions for the treatment of gassed persons.

O. L. Cook's article in "LIME" gives carefully prepared specifications and tests for making a suitable lime for making bleach.

"Buffered Bleaching," by C. T. Henderson, describes the preparation and use of hypochlorous acid for pulp bleaching.

All northwest pulp manufacturers can profitably read 'Bleaching of Western Hemlock Sulphite," by N. W. Coster of the Soundview Mill. This paper includes a resume of Soundview's present practice, together with a discussion of other northwest bleaching operations.

Wesley Osborne's article on "Hardwood Bleaching" reviews his experiences on this subject during some twenty years of pulp and paper mill operation.

E. Sutermeister's article on 'Bleaching Soda Fibre" is interesting and instructive.

E. G. Milham describes the recent changes that have taken place in "Bleaching Old Papers."

Tom Moffitt was studying chemistry with me at Cornell University twenty years ago. He started his pulp and paper activities about fifteen years ago as an associate of Guy Howard working on the utilization of waste sulphite liquor at the Washington Pulp & Paper Company at Port Angeles. For the last few years he has devoted much time to bleaching problems spending several months last fall with John Rue visiting many different bleaching operations in the east, middle west, and south. He has supervised the construction and detailed operation of the Hooker chlorinating system. He will present a detailed description of this equipment, its present operation and use in the chlorination and bleaching of sulphite, sulphate and soda pulps.

For more than 10 years I have urged at local and National TAPPI meetings the formation of a TAPPI committee on "Bleaching." Possibly other TAPPI members here including chlorine and equipment manufacturers, and pulp mill operators will further this suggestion. Such a movement could well originate in the Northwest for there has been more recent progress in bleaching here than in any other section. This meeting is a real step forward in recognition of the importance of bleaching.

THE HOOKER CONTINUOUS CHLORINATION SYSTEM

By TOM E. MOFFITT*

The improvement in pulp bleaching practice which apparently could be obtained by a chlorination stage preceding a bleaching stage led the Hooker Company technical staff to develop a system whereby a continuous flow of pulp can be chlorinated with easy control and uniformly satisfactory results.

The flow-diagram is intended to indicate the essential features of the Hooker system in a way that makes explanation relatively easy.

The start of the system is a brown-stock chest. It is desirable that this chest be as large as posible in order to provide adequate blending. A chest that will hold two or more cooks at a consistency of aproximately 4% will permit the elimination of a major part of the bleachability variable due to differences between cooks. A large brown-stock chest is not, however, essential. As will be shown later, the differences of bleachability between cooks can be compensated for easily by the method of control used. The modern cooking methods used by many of our mills result in quite uniform pulp.

The pulp is pumped from the brown-stock chest through a consistency regulator which provides for the passage of a uniform amount of stock per gallon pumped. The consistency used should be between 3% and 3½%.

A valve just above the pump is a safeguard against syphoning back acid stock in case of a pump or power failure.

A stock control valve provides a means of regulating the amount of flow of pulp through the chlorination system.

We have, then, on the down-stream side of the stock control valve, a uniform flow of stock with a regulated consistency. There is one way of making this slightly more perfect—that is by having this pump deliver to a head-box with an overflow back to the brown-stock chest. Another pump would move the stock from the head-box to the chlorination system. This provision eliminates the small variable which may occur due to changes of depth of stock in the brown-stock chest. With good screening and thickening operations, however, we may expect fairly constant levels in the chest and a uniform flow through the stock control valve.

A gauge indicates the stock pressure beyond the stock control valve. It is desirable to have a recording gauge in addition so that a record of any variations in flow may be kept.

At this point chlorine gas is injected.

*Hooker Electrochemical Company, Tacoma, Washington.

Liquid chlorine from a tank car is piped to an evaporator where it is gassified. Suitable gauges, valves and safety appliances are installed to guard against accidents. For example, an automatic chlorine shut-off valve is installed in the chlorine gas line. This valve is held open by a solenoid which is actuated by the current operating the motor of the stock pump. Should the power to the stock pump fail—resulting in a stop in the flow of pulp, the chlorine gas supply is immediately and automatically shut off. The current to this solenoid valve is also broken by means of a pressure-controlled switch—the switch being opened if the pressure in the stock line falls below a certain setting. This safety factor is provided in case the intake to the stock pump becomes plugged so that no stock would flow even though the pump continues to run. In other words —if for any reason there is no stock at the point of injection to absorb the chlorine, the supply of chlorine is automatically shut off.

A valve regulates the amount of chlorine flowing into the pulp, and a gauge indicates the pressure of that chlorine. Obviously the chlorine pressure is at all times greater than the stock pressure. With all elements of the system functioning smoothly, the amount of difference in pressures of stock and chlorine gives to the operator an indication of the rate of chlorination. The diagram shows two gauges. Actually there has been developed a gauge having one pointer, a moving dial and a fixed dial. The moving dial is actuated by the stock pressure and the pointer by the chlorine. The reading on the fixed dial to which the zero of the moving dial points is the stock pressure. The reading on the fixed dial at the end of the pointer is the chlorine pressure. The reading on the moving dial under the pointer is the differential in pressures between stock and chlorine. An operator soon learns to adjust this differential for the variations in hardness of stock or degree of chlorination desired.

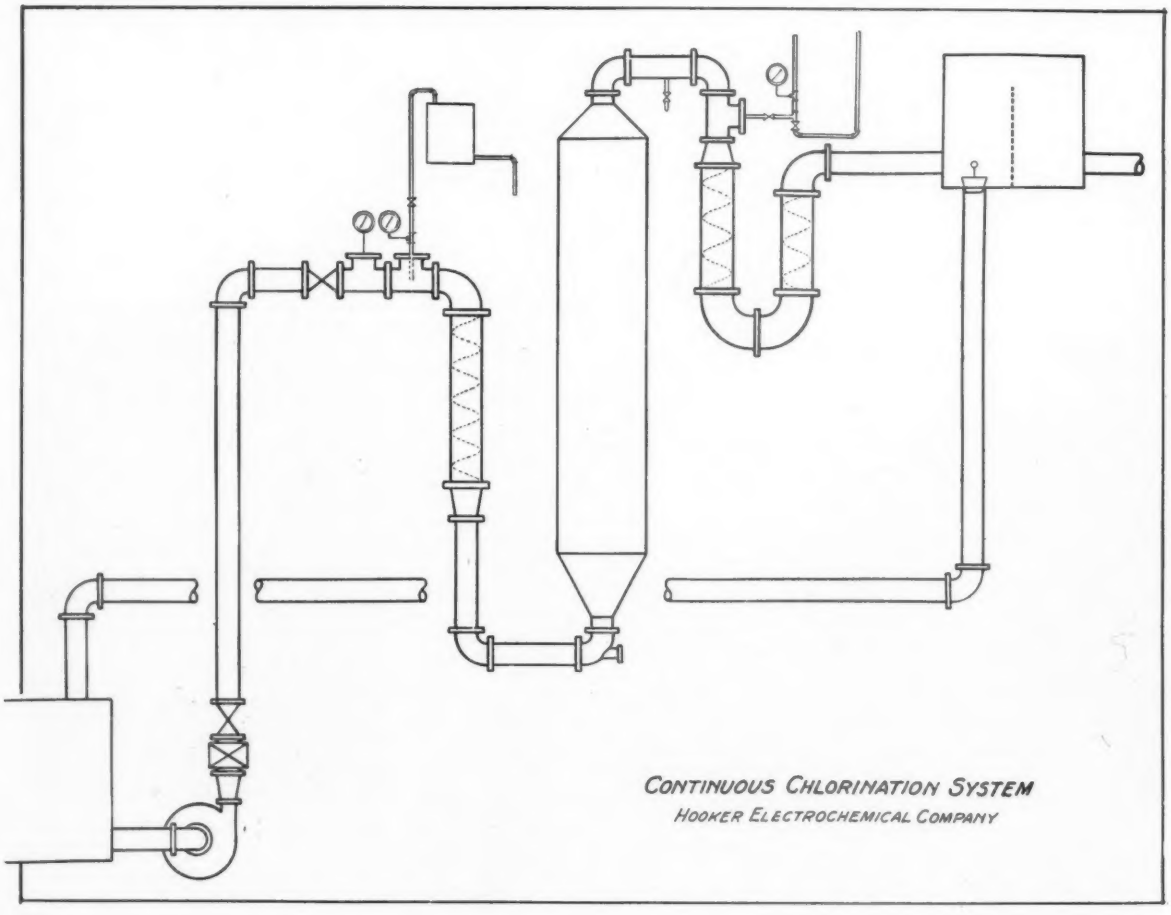
TOM E. MOFFITT
Hooker Electrochemical Co., Tacoma

The stock into which chlorine has been injected passes to a vertical mixer column. There are no moving parts in this mixer. It consists of a spiral with baffles and by-pass holes which quickly and effectively mix and blend the chlorine, water and pulp. Being vertical, any unabsorbed chlorine bubbles working upward through the column meet a downward flow of stock sufficient to effect their absorption.

The retention tower that follows is designed to retain the chlorinated pulp in the acid stage long enough to permit an economic absorption and reaction of the chlorine.

Beyond the retention tower a small sampling line is provided to permit withdrawing samples of acid stock. Liquor from these samples may be titrated to determine the chlorine residual. This residual test is the real control of the chlorination operation. By maintaining a uniform residual, the bleachability of the pulp is kept uniform and every batch subsequently bleached will require the same amount of chlorine in the form of bleach liquor.

In practice it has been found that adequate blending of brown-stock will reduce the necessary frequency of the residual tests to one test every 30 minutes. With smaller brown-stock chests, a test every 15 minutes may be required, but



CONTINUOUS CHLORINATION SYSTEM
HOOKER ELECTROCHEMICAL COMPANY

operators have found that they can successfully anticipate changes from one blow-pit to another and adjust the chlorine control accordingly.

Following the retention period, milk-of-lime is injected into the pulp stream in quantity sufficient to neutralize the free acid and convert the residual chlorine to Calcium Hypochlorite, or bleacn liquor. The milk of lime so used is prepared in the same way as the lime for making bleach liquor. However, it is screened through 170 mesh wire on a simple side-hill screen so as to remove all dirt and grit. A continuous flow of this milk of lime is cycled from its storage tank. The pressure of the lime flow is regulated by a valve. The amount added to the pulp is just enough to make the stock slightly alkaline as indicated by a simple indicator test in the tail box.

A mixer column identical to that for mixing the chlorine effects quick and uniform mixing of the lime.

The neutralized stock flows to a tail box and thence, in the case of sulphite pulp, to the washer. Should the washer used be constructed of corrosion-resistant materials it is not necessary to neutralize acid sulphite stock with lime.

In the case of sulphate stock a tower is provided to retain the stock for one hour after its delivery to the tail box. To economically bleach sulphate pulp to the brighter shades it is necessary to chlorinate it sufficiently to leave a chlorine residual after the retention period great enough to require about one hour to exhaust as bleach liquor. The bleach liquor formed by the injection of lime acts preferentially on the coloring matter in the sulphate fiber, but in the case of sulphate, the bleach liquor so formed acts preferentially on the coloring matter in solution. We believe that the bleaching action on this dissolved coloring matter can be carried out in the sewer more advantageously than in retention chests. To repeat briefly—sulphite pulp is washed immediately after the lime is added, or immediately after the necessary acid retention if no lime is used. Sulphate pulp is carried through a one-hour retention period after the lime is added, and is then washed before the second stage of bleaching.

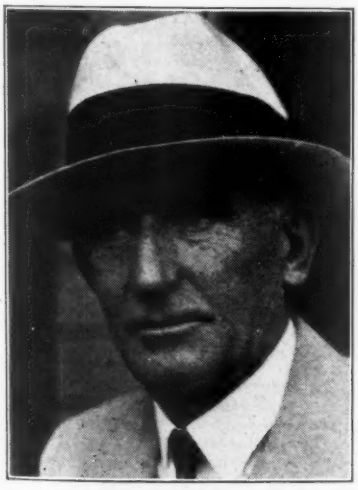
A return line is carried from the tail box to the brown-stock chest. On starting up the operation, the plug is lifted and stock returns to the chest until the chlorination is stabilized. This eliminates the passage of improperly chlorinated stock to the bleach cells. This return line also provides a convenient safety device for stopping the flow of stock to the washer in case of a breakdown of that machine or a conveyor beyond.

The equipment through which passes stock in an acid condition is rubber lined. All elements are standard pipe fittings except the retention tower and the internal parts of the mixer columns. The retention tower is welded steel. The internal parts of the mixer columns are special castings, rubber covered and vulcanized in place. One of the large rubber companies has developed a type of rubber and a method of bonding it to steel that make this type of equipment suitable for continuous operation over many years.

The stock passing to the washer is diluted to less than 1% in order to effect the formation of a good cake on the drum. For this purpose the filtrate from the seal-pit of the washer leg may be used.

Briefly summarizing—this system offers a means of chlorinating pulp to a uniform bleachability with any desired proportioning of chlorine. The bleachability of the pulp may be reduced by chlorination to a point where final bleaching may be accomplished with a minimum loss of physical properties and a worth-while saving of chemicals.

It may be of interest to you to know that unsettled bleach liquor has been used successfully with pulps of the highest quality. This has been made possible by using the simple side-hill screen previously mentioned for screening the milk of lime before chlorinating. The procedure consists of screening the lime, chlorinating, and storing the bleach liquor in an agitated tank from which it is metered to the pulp. After chlorinating the lime to the end point, enough screened lime may be added to adjust the alkalinity of the bleach liquor to any desired point. The advantages are the saving in settling tanks, sludge washing and sludge losses; and also the alkalinity control.



A. D. (DAD) WOOD
Superintendent
Shaffer Pulp Company, Tacoma TAPPI rejoiced in his recovery

PULP BLEACHING

By DR. W. HIRSCHKIND[1]

Chlorine can react with organic compounds in three different ways. It may simply be added as in the case of the chlorination of an unsaturated compound for instance, Ethylene.

(1) $C_2H_4 + Cl_2 = C_2H_4Cl_2$

Ethylene Chlorine Ethylene Dichloride

or it may act by substitution, exchanging one hydrogen for one chlorine as in the case of the chlorination of Benzene

(2) $C_6H_6 + Cl_2 = C_6H_5Cl + HCl$

Benzene Chlorine Monochlorbenzene

One-half of the chlorine remains organically combined, while the other half is split off as Hydrochloric Acid. This substitution may be accompanied by an oxidation as for instance in the reaction of chlorine on ethyl alcohol.

(3) $C_2H_5OH + 4Cl_2 = CCl_3CHO + 5HCl$

Ethyl Alcohol — Chloral

Hydrochloric Acid formation is, therefore, indicative to both substitution chlorination and oxidation. In case of the former, one-half of the chlorine is split off as Hydrochloric Acid, while in the case of the latter the total amount of chlorine is used up in the Hydrochloric Acid formation with none remaining in organic combination.

In the light of the above, pulp bleaching by chlorination can be considered as a combination of substitution and oxidation reactions with perhaps an occasional straight addition to Chlorine by an unsaturated compound.

The present practice of bleaching of chemical pulp, old as it is, must still be considered an art rather than a science, with a large amount of patent literature substituting scientific facts. Very little is known about the formation of lignin chloride, oxidized lignin compounds as well as oxycellulose.

The bleaching practice of today consists usually of a chlorination stage by means of chlorine gas, chlorine water or Hypochlorous Acid followed by a second stage with a solution of Calcium Hypochlorite. Chlorine dissolved in water is hydrolyzed largely into Hypochlorous Acid and Hydrochloric Acid according to the equation:

$Cl_2 + H_2O = H^+ + Cl^- + HClO$

the Hydrochloric Acid as a strong acid being ionized.

Hypochlorous Acid as such, made by various methods, differs from the Chloine solution only in the pH and we may consider all solutions of Chlorine in water at a pH range of 2.5 to 6.5 as solutions of Hypochlorous Acid. Experience has taught us that such solutions react with pulp through substitution chlorination with approximately one-half

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EARL G. THOMPSON
Secretary-Treasurer Pacific Section of TAPPI, Presented Great Western's Papers

of the Chlorine used being split off as Hydrochloric Acid.

The second bleaching stage, carried on with solutions of Calcium Hypochlorite, must be considered in the light of actual experience as largely an oxidation reaction. Hypochlorites as salts of a strong base with a weak acid, are ionized to a considerable degree; hence the Hypochlorite ion favors oxidation reaction, while Hypochlorous Acid favors substitution chlorination. From experience we know that the substitution reactions proceed much more rapidly than the oxidation reactions. It is possible to increase the rate of the latter by the addition of certain metal compounds, principally nickel or manganese.

An interesting series of experiments were conducted some years ago by H. Wenzel of one of the pulp and paper subsidiaries of the German I. G. He treated sawdust with Chlorine in four different forms: as Chlorine gas, Chlorine water, Chlorine dissolved in Hydrochloric Acid, and Chlorine dissolved in Carbon Tetrachloride. If we again take the formation of Hydrochloric Acid as the indicator of substitution chlorination and oxidation we find that Chlorine dissolved in Carbon Tetrachloride leads entirely to the oxidation reaction. Chlorine gas is next in line and leads also largely to oxidizing reaction which is falling off with Chlorine dissolved in Hydrochloric Acid, while Chlorine water reacted largely by substituion.

We must assume that the hydrolysis of Chlorine to Hypochlorous Acid is at a maximum in Chlorine water, while it is practically Zero in Carbon Tetrachloride. Furthermore, with Chlorine dissolved in Hydrochloric Acid the hydrolysis in largely depressed.

Comparing these findings with our earlier discussion we find the action of Hypochlorous Acid the same in both cases. We also find a surprising similarity between the action of unhydrolyzed Chlorine or Chlorine gas with that of the Hypochlorite ion.

It would, in my opinion, be of great interest and importance to follow up the pulp bleaching reactions with hydrolyzed Chlorine as well as with Hypochlorite ions. The modern pH set with the glass electrode lends itself very well to this task.

SIMPLIFIED pH MEASUREMENT

By DAVID J. PYE[1]

The appreciation of the importance of pH as a governing or influencing factor in laboratory and industrial chemical processes has been gaining momentum very rapidly during the past few years. Heretofore, the fact that many reactions must necessarily go on the acid or alkaline side has been taken at its face value but the present trend is to study and utilize correct pH control which in many cases allows better yields or imparts definite desirable physical properties to the product. Indeed, in some cases it has been found that rigid pH control is the only means of making some reactions commercially possible. The classic example of this is the Ethyl Dow Plant at Wilmington, North Carolina (1), where the production of Bromine from sea water is made possible only through accurate pH control between very definite limits.

The problem of pH measurement has not been an easy one and it has only been since the discovery of the glass electrode by Haber (2) and its subsequent development by MacInnes and Dole (3) and other workers that the problem has been satisfactorily solved. The usual indicators are subject to oxidation and reduction and are useless in colored solutions. The technique of the hydrogen electrode is difficult and the electrode itself has many limitations caused by oxidation and reduction potentials. The antimony and other oxidation-reduction electrodes are subject to narrow ranges and are not reliable in solutions of unknown composition. The glass electrode suffers from none of these limitations. It is not affected by color, turbidity, oxidation or reduction and it has a wide useful range of from zero to approximately 10.5 pH. However, it does have the disadvantage of possessing an internal resistance of at least three megohms which fact requires a rather sensitive means of potential measurement.

Though the potential of the glass electrode may be measured by ordinary potentiometric methods, the galvanometer must be very sensitive and is consequently subject to such annoyances as vibration and sluggishness. The most satisfactory means of measurement has been found to be the vacuum tube voltmeter because of its extremely high grid resistance which allows potentials to be measured without drawing any current from the potential source and its rapidity of response. The vacuum tube voltmeter permits the use of relatively insensitive current indicators which makes possible a desirable degree of stability and ruggedness and also makes possible a degree of portability and compactness not obtainable by any other method.

The instrument as developed in this laboratory was designed in the interest of simplicity or operation, durability, compactness, portability and reliable accuracy. The vacuum tube serves only as a null indicator which eliminates any errors introduced by changing tube characteristics and varying battery voltages. The general principle of operation is to apply the unknown voltage of the electrode to the grid of the tube and note the plate current flowing in the circuit. A variable known voltage is then applied to the grid and adjusted until the plate current of the unknown conditions is duplicated. The variable known voltage is then equal to the potential of the glass electrode and is read on an ordinary voltmeter. Since the reference potentials in the electrode system are never reliably constant over a long period of time and with hard unskilled usage, provisions have been made to standardize the instrument against a standard buffer at the beginning of a series of measurements or at the beginning of the day. This arrangement makes possible the calibration of the meter scale directly in pH units and permits a high degree of flexibility both in pH ranges available and in the use of various types of electrodes. The speed and accuracy of this system is such that an unskilled operator may make a pH measurement accurate to 0.1 pH in approximately fifteen seconds or less. The life of the batteries which are entirely self contained is equal to their shelf life or at least one year.

This instrument is the result of some five years of work with the glass electrode in this laboratory by Mr. H. Bender and the author and has proven entirely satisfactory for analytical and general pH measurements. It has found particular application in research on the bleaching of paper pulp and ground wood with chlorine and hydrosulphites. It is believed that an instrument of these characteristics should find an increasing application in research and control in the paper industry.

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(1) Stewart, L. C., "Commercial Extraction of Bromine from Sea Water," Ind. and Eng. Chem., 26,361-69 (1934).
(2) Haber and Lemensiewicz, Z. physick. Chem. 67,385 (1909).
(3) MacInnes, D. A., and Dole M. Ind. & Eng. Chem. Analytical Ed., 1,57-9 (1929).

[1] Research Chemist, Great Western Electro-Chemical Co., Pittsburg, California.

EXPERIMENTAL STUDIES ON THE BLEACHING OF WEST COAST SULPHATE PULPS

By BRIAN L. SHERA*

Throughout the country there is a growing movement in sulphate pulp mills to improve their product through cooking, refining, and bleaching. The bleaching varies from semi-bleaching to high white colors. The semi-bleached Kraft is competitive to the heavier sulphite wrapping papers such as butcher wrap. A higher stage of bleaching gives a pulp equal or better in color than the higher grade unbleached sulphite pulps. It is one-third to one-half stronger and is used in the manufacture of high grade wrapping and bag papers and container board. This bleached sheet will readily color and finish well, and its greater freeness will permit higher speed machine operation.

The high white sulphate pulps comparable in color to the better sulphite pulps are yet in the nature of specialties. These are specially prepared throughout the entire process, and the bleaching is carried out in several stages. Outside of the producers of these pulps there is very little knowledge of the cost of production.

In spite of the growing interest and production of bleached Kraft pulps there has been only a limited amount of data published on the bleaching process. Practically nothing is to be found on the bleaching of the West Coast sulphate pulps.

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FRED SHANEMAN
In Charge of Arrangements for Olympia Meeting

The data to be found in literature exposes many conflicting claims on the methods of bleaching. Apparently the controversy is due to the wide latitude writers have given to the color of the pulp resulting from their efforts. The color range may be from 75 to 90 and therefore, the study of published data as to physical and chemical characteristics must of necessity be confusing in estimating the relative merits of bleaching methods.

This limited study was initiated to ascertain certain basic facts which could be used or discarded in order to determine optimum conditions for future work. Tests were made to show the effects of chlorination, bleach liquor, and intermediate treatments with other than Chlorine compounds. Single and multiple stage treatments were tried. The effects of consistency and temperature variations were noted. The pulps were obtained from two mills and might be classified as Hard Western Hemlock, Hard White Fir, and Soft Hemlock Sulphate pulps. It must be remembered in evaluating results that the latter pulp was tested by different equipment, giving lower readings.

The easy bleaching Hemlock was dried stock and the other two pulps were obtained from the bleacher decker and squeezed to a consistency of about 15%. The whole samples were thoroughly disintegrated and mixed in order to secure samples 1,000 gram air dry equivalent for bleaching tests. The low consistency, 2½% to 4%, treatments were carried out in a special circulating device that permitted rapid chlorination. The higher consistency treatments, 5% to 15%, were performed in enamelled containers. Lack of time and equipment precluded carrying out airdry weight tests prior to each subsequent procedure, so there is a small error due to shrinkage.

Chemicals used are indicated as percentages by weight of the air dry pulp samples. Caustic Soda is given in terms of NaOH; Lime as the hydrate; and Chlorine and Calcium Hypochlorite in terms of available Chlorine. Acidity or alkalinity refers to the absence or presence of pink color on the addition of Phenolphthalein. Bleachability demands were determined by the use of potassium permanganate after the manner of Wiles, and converted by his chart to Chlorine numbers.

Semi-Bleaching Kraft Pulps

It is a relatively simple process to semi-bleach sulphate pulps to obtain manila shades in the finished products. This may be performed in a manner that will produce an improved pulp and yet retain the Kraft pulp characteristics of strength and freeness. On the easy and medium bleaching Krafts one application of bleaching liquor will suffice and the equipment may consist of beaters, Bellmers, or other pulp circulating equipment. The consistency may vary from two to six percent and the temperature from 25°C to 35°C. Although the higher consistency and temperature ranges together will prove detrimental to physical characteristics and moderation will have to be practiced, the bleaching time will ordinarily be from one to two hours.

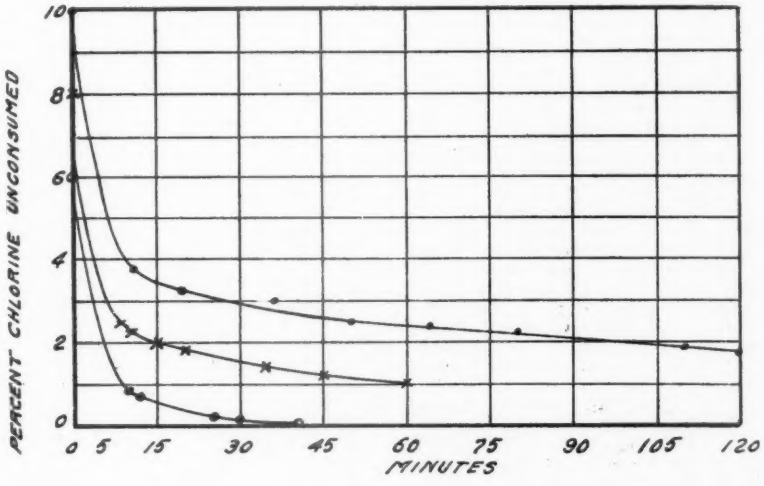
Chlorineation Experiments (Note Graph No. 1)

These were conducted in order to effect a rapid removal of lignin and to note the characteristics of the fibre exposed to acid conditions resulting therefrom. The consistency was 3% and the temperature 16°C.

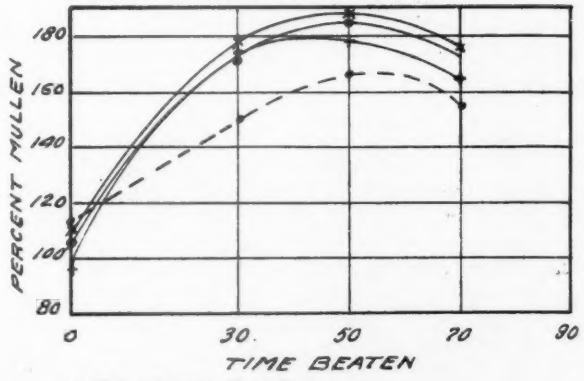
The hard bleaching Hemlock pulp was subjected to the addition of Chlorine in the amount of 6, 8, and 10%. The easy bleaching Hemlock was chlorinated 5% and the hard White Fir 8%. The following table gives the results.

Pulp	Cl_2 Consumed	Time	Mullen	Cl_2 Number
Untreated Hard Hemlock			178	13.5%
6% Chlorination	6 %	40	185	6.0%
8% Chlorination	7 %	60	185	4.5%
10% Chlorination	8.4%	135	168	3.2%
Untreated Soft Hemlock			132	7.2%
5% Chlorination	4.7%	60	135	3.8%
Untreated White Fir			175	14.0%
8% Chlorination	7.2%	120	164	6.5%

GRAPH Nº-1
CHLORINATION CURVES



BEATER TESTS



\+ UNTREATED PULP
o 6% CHLORINATION
× 8% " "
• 10% " "

Bleaching with Calcium Hypochlorite (Note Graph No. 2)

The hard bleaching Hemlock was treated in single and two stage operation with disastrous results to the pulp. The consistency was 6% and the temperature 35°C. The tabulation gives typical results.

Pulp	Cl_2 Consumed	Time	Mullen	Cl_2 Number
Untreated Hard Hemlock			178	13.5%
15% Bleach	14.7%	120	85	1.8%
8% Bleach—First Stage	8.0%	75		
4% Bleach—Second Stage	3.3%	180	120	1.7%

Pretreatment of Untreated Pulp

The hard Hemlock and White Fir pulps were pretreated with dilute Caustic Soda solutions for a period of one hour at 15°C. and 3% consistency. The Caustic treatment did not affect the Mullen strength, but appeared to reduce the bleachability. Chlorination of this pulp without washing out the Caustic produced practically the same results as the untreated pulp.

Calcium Hypochlorite bleaching following the Caustic treatment produced a more prolonged bleaching action than without the Caustic, but the Mullen and color were virtually the same. Typical results are shown tabulated.

Pulp	Cl_2 Consumed	Time	Mullen	Cl_2 Number
Untreated Hard Hemlock			178	13.5%
1% NaOH+10% Cl	8.4%	150	168	3.5%
Untreated White Fir			175	14.6%
2% NaOH			177	11.6%
2% NaOH+14% Bleach	14.0%	280	82	3.1%

Calcium Hypochlorite Bleaching Following Chlorination

Bleaching following direct chlorination shows considerable value over two stages of bleach liquor. The Mullen strength is vastly higher; the freeness is nearly double; and the color is practically identical. Two samples were treated with equal amounts of Chlorine in both the first and second stages, except that the first stage of one was carried out with chlorination and the other with bleach liquor. A graphic representation of this is interesting. (Note graph No. 3.)

A series of tests utilizing first stage chlorination and second stage bleach liquor treatments were carried out on the high bleachability Hemlock and White Fir. The results were unsatisfactory even though wide variations of both the Chlorine and Hypochlorite stages were employed. A poor white color was obtained at the expense of strength, and a very light buff shade could be reached with practically no loss of strength—but the freeness decreased very slightly on any of these operations.

A summary of results obtained in this group of tests appeared to show that sufficient chlorination should be employed to quickly satisfy the lignin Chlorine demand. Also, that in the final stage a minimum of bleach liquor should be used. The pulp should be as free as possible of lignins, sulphur compounds, dyes, etc., before the final hypochlorite stage, which should be utilized for brightening only. It is quite possible that not over 1% bleach liquor should be employed in the final treatment. Chlorination alone, however, cannot reduce the hard Kraft pulps to a condition where 1% bleach liquor is of appreciable value—even two chlorination stages did not reduce the bleachability to a sufficiently low figure. Two Calcium Hypochlorite stages following chlorination attacked the cellulose severely without affecting the discoloration of the sulphur-tannin dye present in hard cooked Western Krafts. It would thus appear that an intermediate treatment is imperative following the chlorination stage and prior to the final bleach liquor stage.

For the successful bleaching of Western Kraft pulps an intensive study will have to be initiated toward the non- pro-

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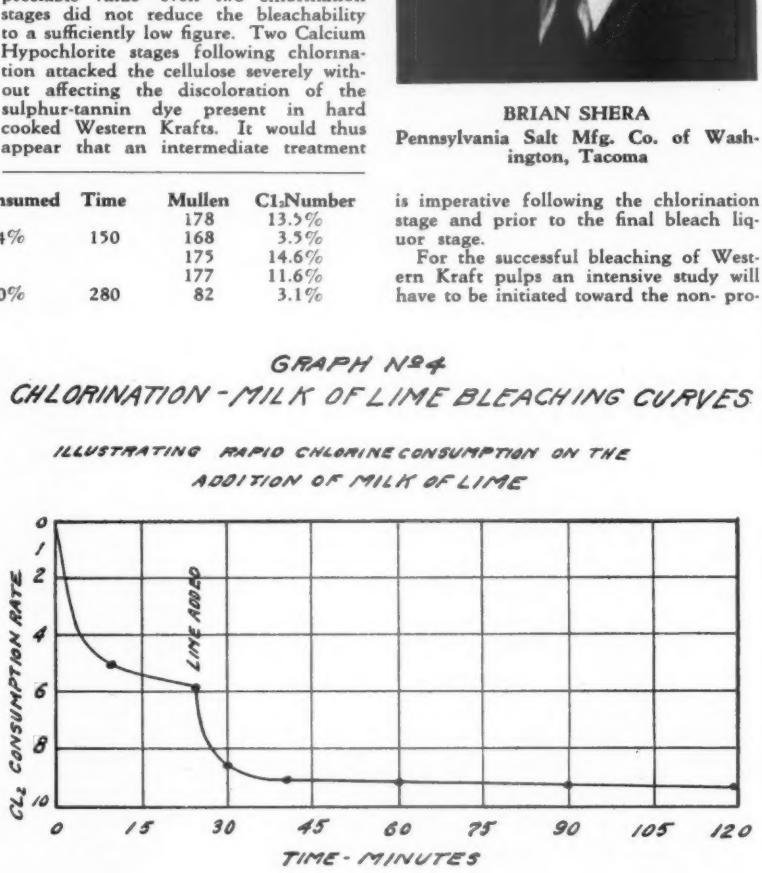
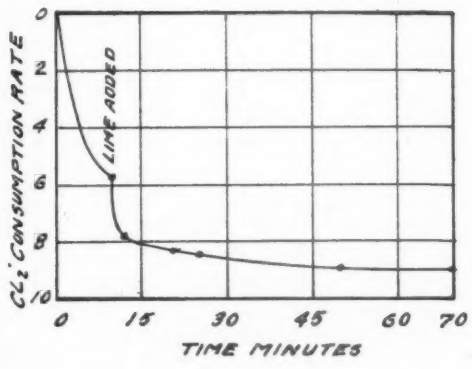
Pennsylvania Salt Mfg. Co. of Washington, Tacoma

GRAPH No 4
CHLORINATION - MILK OF LIME BLEACHING CURVES
ILLUSTRATING RAPID CHLORINE CONSUMPTION ON THE ADDITION OF MILK OF LIME





The papers presented at the Portland and Olympia TAPPI dinner meetings on the subjects of timber resources, timber research and pulpwood preparation, by Mr. Clark Lewis, Dr. J. Elton Lodewick and by Mr. E. J. Hanzlik, will be published in the MAY number of PACIFIC PULP & PAPER INDUSTRY.

duction of the sulphur-tannin dyes or an improved method of extracting them from the pulp in order to simplify the bleaching process.

The Use of Lime in Kraft Bleaching

A study was made of the uses to which this material could be put in the bleaching process.

A high Lime bleach liquor, or the addition of Lime to the Hypochlorite stage, increased the time of bleaching and the dried pulp sheet showed a reversion of color immediately, which increased with time.

High initial chlorination in the first stage followed within five to ten minutes by addition of Milk of Lime in order to neutralize the acids formed and to convert the residual Chlorine to Hypochlorite were also studied. It was found that the first stage would be prolonged and the bleachability of the pulp considerably reduced; but on the other hand, minute dirt specks from the best commercial Lime available were noticed in the finished hand sheets. A salt of Calcium and the sulphur-tannin dyes were probably also formed. In the slush stock the color of the final hypochlorite bleach had a very white appearance, but on the carefully dried sheet the color reverted and continued to do so for a period of time. Two stages of the Chlorine-Lime treatment were tried with advantages toward strength retention, but with reversion of color in the dry state.

All treatments in which Calcium was involved other than that contained in the bleach liquor, proved to be detrimental toward the attainment of a stable white pulp. Evidently some insoluble Calcium Salts were formed which do not readily wash out, even in the presence of dilute acid washes at blood temperatures.

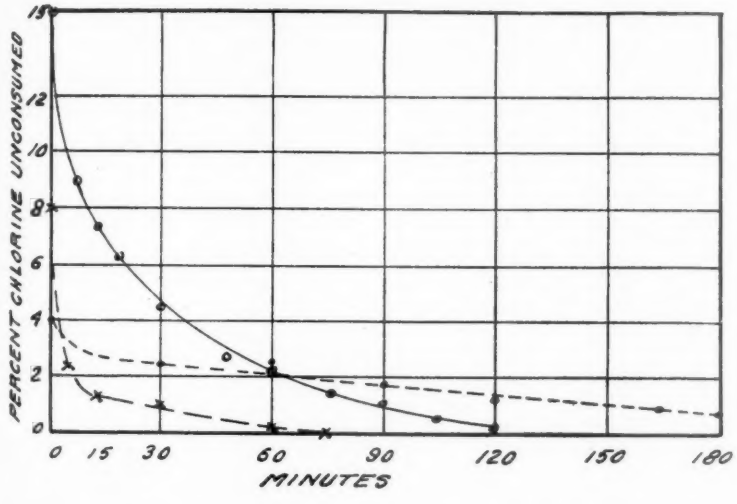
The plotting of the Chlorine consumption curves was quite revealing in the experiments where excess Chlorine was added and immediately changed to bleach liquor by the addition of Milk of Lime. Two typical curves are illustrated in Graph No. 4. It was difficult to accept the rapid Chlorine consumption rate after the Lime addition. In such low consistency and temperature it could not be expected that the Hypochlorite newly formed would react with the pulp as rapidly as was found in this work. It was suspected that a considerable loss of Chlorine took place—due to the newly formed Hypochlorite bleaching the chlorinated lignins already in solution and freed from the pulp.

This theory was later proved to be true. In one sample 80 grams of Chlorine were introduced in 10 minutes. A sample of fibre free solution was taken at 12 minutes, showing a Chlorine concentration of 0.65 G.P.L.; and upon adding Milk of Lime to give a faint pink color with Phenolphthalein, the solution showed 0.45 G.P.L. available Chlorine—or a loss of 0.2 G.P.L. The solution in the bleacher consisted of 42.5 litres, giving a Chlorine loss of 8.5 grains in 80 grams, or 10.6%.

In another sample 5.2 grams were lost in 70 grams applied—or 7.4%. It was found that this method of chlorinating and bleaching in one stage was conducive to considerable loss of Chlorine, which was really of no value in the actual pulp bleaching. The lignins already in solution need only be washed out for effectual removal.

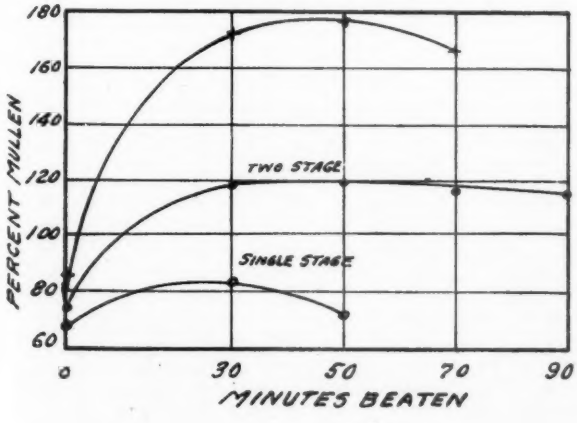
GRAPH Nº 2

CALCIUM HYPOCHLORITE BLEACHING CURVES



+ UNTREATED PULP
o SINGLE BLEACH
x 1ST STAGE BLEACH
o 2ND STAGE BLEACH

BEATER TESTS



Temperature Effects

Temperature in the chlorination stage is of little consequence insofar as commercial practice is concerned. Naturally increased temperatures speed the chemical action, but not sufficiently to warrant a pulp mill to attempt the heating of the enormous volume of water present at low consistencies.

Higher temperature in the intermediate stages which are caried out at moderate consistencies is of value toward increasing the extraction of the fibre encrustants. The ideal temperature would have to be determined by the equipment on hand and a balance of steam and chemical costs.

The Hypochlorite stage will not stand high temperatures. The ideal is difficult to determine as it varies with the consistency. It is an inverse quantity—i. e. higher consistencies require lower temperatures.

Consistency Effects

The equipment did not permit much variance in consistency, so no experimental data of value could be obtained. In pulp mills however, the thickening of stock and the handling of it economically probably limit the consistency in the order of three to four percent. Other work shows that the chlorination stage requires plenty of water to take up the dissolved lignins, therefore low consistencies are in order.

Intermediate stage consistencies are varied from 5 to 12%, but no conclusion could be reached that would be of value to translate to commercial practice.

Bleaching in the Hypochlorite stage was carried out usually at 6% consistency because of the ease of performing this by hand methods. Higher densities at the same temperatures and same times invited greater bleach consumption, but on the other hand, the pulp color was not improved and the Mullen test dropped drastically. For example, a final stage bleach was treated at 27°C, 270 minutes, and 2% added bleach at 5% and 12% consistency, respectively. The results were 156 and 140 Mullen with even color in the high consistency

sample, in spite of its slightly greater bleach consumption. A 15% consistency sample compared to one of 6% at 27°C., 300 minutes, and 3.4% added bleach showed utter ruination of the former with a Mullen of 75 against one of 135. Neither of these tests were of value insofar as bleaching results were concerned, but are used to illustrate the general tendency found in varying the consistency of the final bleaching stage.

No suitable mechanical equipment could be found to carry out bleaching tests at high consistencies. It was found that the usual bread mixers merely stir around the fibre bundles without squeezing them sufficiently to produce skin film changes of the bleach liquor on the fibre surfaces. It was found on all of the pulps that slight squeezing and hand mixing of the samples every 10 minutes produced increased action in the bleaching which could not be obtained with paddles stirring at the same time intervals.

Conclusion

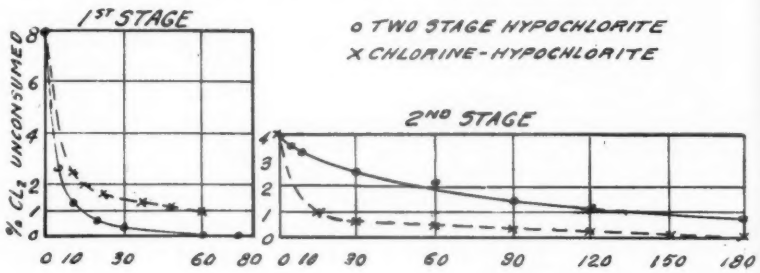
As this writing progressed, assumptions and conclusions were drawn in the various experimental steps and need not be repeated. It is hoped that Western Kraft mills take cognizance of the fact that foreign and domestic Kraft mills are producing excellent high white sulphate pulps. It would be well to prepare for this competition by initiating a serious study of the cooking and bleaching problems which affect the production of a high grade bleached pulp. There is an abundant wood supply and it is generally conceded that the fibres in West Coast woods are superior to others in this country for the production of high physical and chemical properties in the finished product.

GRAPH No 3

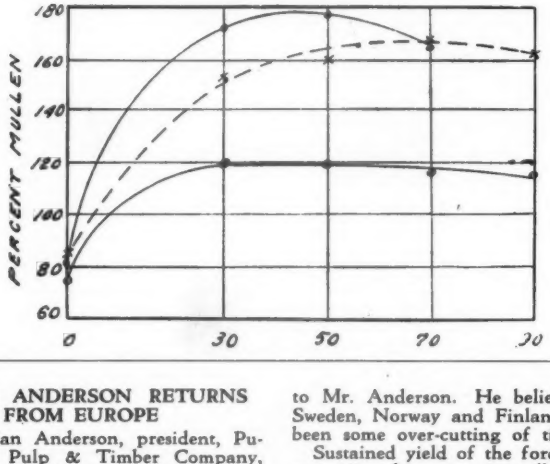
CHLORINATION - VS - BLEACH LIQUOR IN FIRST STAGE

OPERATION	SAMPLE - No - 1		SAMPLE - No 2	
BLEACHING STAGE	FIRST	SECOND	FIRST	SECOND
BLEACH-ADDED % CL_2	8.0 B.L.	4.0 B.L.	8.0 CL_2	4.0 B.L.
BLEACH CONSUMED	8.0	3.3	7.0	3.9
TIME — MIN	75	180	60	180
TEMP - °C	35	35	20	35
CONSISTENCY - %	6.0	6.0	3.0	6.0
NaOH ADDED - %	0.25	0.1		0.9

BLEACH CONSUMPTION CURVES



BEATER TESTS



THE JOINT TAPPI-SUPERINTENDENTS MEETING

The joint Spring meeting of the Pacific Coast Division of the American Pulp & Paper Mill Superintendent's Association and the Pacific Section of the Technical Association of the Pulp & Paper Industry, will be held—

JUNE 5th and 6th

at the Hotel Monticello in Longview, Washington. Mr. H. Robert Heuer of the Pulp Division, Weyerhaeuser Timber Company, is in charge of arrangements.

The meeting is open to everyone interested in the pulp and paper industry.

OSSIAN ANDERSON RETURNS FROM EUROPE

Mr. Ossian Anderson, president, Puget Sound Pulp & Timber Company, Bellingham, Washington, returned the first of April from a six-week trip to Northern Europe where he studied conditions in the pulp and paper industry, the developments in new cellulose fibres and the forestry practice of the Scandinavian countries.

Mr. Anderson reported that he was received cordially by the men in the various mills he visited and was courteously given an opportunity to learn at first-hand of the new developments in technique of pulping processes.

Of particular interest to Mr. Anderson was the evidence of stability of mill relationship with labor in the Swedish pulp and paper mills and the advance that has taken place in the introduction of modern machines in recent years. A number of the older and less efficient operations are being discontinued and this production has been displaced by new mills.

There is a possibility that wood costs in the North European pulp producing regions may have reached their low point and are on the way up, according to Mr. Anderson. He believes that in Sweden, Norway and Finland there has been some over-cutting of timber.

Sustained yield of the forests of these countries, however, is well established as public policy and with the encouragement from the governments and people to maintain balance between growth and utilization there is no danger of this overcutting being continued to a point of danger.

KRAFT LINER BOARD PRICE ADVANCED $5 A TON

The Southern Kraft Corporation, wholly owned subsidiary of the International Paper Company, has announced an advance of approximately $5 a ton, or 10 percent, on kraft liner board. The new quotation is now $60 a ton. The corporation has an annual production of about 250,000 tons a year of kraft liner board.

OSBORNE JOINS SUPERINTENDENT'S ASSOCIATION

Mr. Wesley M. Osborne of the Hooker Electrochemical Company's organization at Tacoma recently became a member of the American Pulp & Paper Mills Superintendent's Association.

LYMAN SMITH NEW GENERAL MANAGER OF INLAND EMPIRE

On March 14th Mr. Lyman M. Smith became general manager of the Inland Empire Paper Company of Millwood (Spokane) upon the completion of reorganization plans.

On the same day the federal court in Spokane released the company from the court's jurisdiction, and the $500,000 RFC loan became available for the payment of taxes and for financing improvements costing approximately $100,000, which have since been started under the new management.

Mr. A. W. Witherspoon, Spokane attorney, is president of the reorganized company, succeeding Mr. Judson G. Rosebush of Wisconsin. Mr. Smith succeeds Mr. Waldo E. Rosebush, former treasurer and general manager, Mr. George W. Brown has resigned as superintendent.

A considerable amount of new equipment has already been purchased and more will be bought to modernize the Inland Empire Paper Company's mill and to improve the quality of the papers now manufactured, and at the same time to place the mill in a position to produce other grades within the near future.

Mr. Smith is well known to the industry on the Pacific Coast having been mill manager of the Crown-Willamette Paper Company's mill at Camas, Washington. He left there in 1930 and became associated in an executive capacity with the Cherry River Paper Company of Richwood, West Virginia.

Mr. Smith is a graduate of the Worcester Polytechnic Institute of Worcester, Mass. His experience in the manufacture of a wide variety of pulp and paper includes, besides his work with Crown-Willamette and Cherry River, a number of years as assistant to the general manager of the Brompton Pulp and Paper Company, Limited, of East Angus, Quebec, and a period of association with the Claremont Paper Company of Claremont, New Hampshire.

When improvements now under way are completed, the Inland Empire Paper Company will engage in the manufacture of higher grade papers using groundwood and sulphite finishes. For a number of years the mill has devoted its production almost entirely to newsprint. Newsprint manufacture will be continued, the new grades being supplementary.

Mr. J. L. Janecek has been selected by Mr. Smith to be paper mill superintendent of the Inland Empire mill. He has had much experience in the manufacture of the better grades of fourdrinier and cylinder papers both at the mills of the Marathon Paper Mills Company at Rothschild, Wisconsin and at the Cherry River Paper Company, Richwood, West Virginia.

NEW ZEALAND MILL TO GET UNDER WAY

Mr. and Mrs. H. A. Horrocks of Auckland, New Zealand, arrived in Vancouver, B. C., March 19th, accompanied by Mr. L. A. DeGuere, pulp and paper mill engineer of Wisconsin Rapids, Wisconsin.

Mr. Horrocks as managing director of the Whakatane Paper Mills, Limited, of Auckland, is on an equipment buying trip with Mr. DeGuere, who has designed the company's 50-ton per day kraft pulp, paper and board mill. Mr. Horrocks stated that construction will begin within a few months.

After spending about six weeks in the United States, Mr. and Mrs. Horrocks and Mr. DeGuere will go to Europe, but will return to the United States and the Pacific Coast before going back to New Zealand. Mr. and Mrs. Horrocks will be away from Auckland about seven months.

Mr. Horrocks said upon their arrival that logging and log break-down equipment would very likely be purchased on the Pacific Coast, as logging conditions in his company's timber were very similar to those in this region. It has not yet been decided, Mr. Horrocks said, where the other equipment will be purchased, as that matter will be partially determined by the prices quoted and their relation to the New Zealand tariffs. He hoped, Mr. Horrocks added, that the cost of American pulp and paper mill equipment would be such as to permit his company to purchase a large proportion of its needs in the United States.

Mr. DeGuere spent two months in New Zealand conferring with Mr. Worley, his New Zealand engineering partner, and with Mr. Horrocks before returning to the United States with Mr. and Mrs. Horrocks.

FIBREBOARD L. A. NEWS

The board liner in the finishing department of Fibreboard Products, Inc., plant at Vernon, has recently been overhauled and reconditioned, and is now in production again.

In the pressroom there is a new "5.0" two-color Miehle press, the fifth of that size and style, enabling the plant to handle combination runs with increased speed.

Other improvements include a new raw material warehouse, and the removal of the old silicate machine and the installation of new guide roll stands on both No. 1 and No. 2 machines. The 1500 K. W. turbines in the power plant was recently overhauled for the first time in six years, with surprisingly little wear being found.

Recent visitors at the plant include R. H. Shainwald, vice president and general manager of the Paraffine Companies, Inc., Leland Rosener and Reynolds McHenry, engineers from San Francisco, and Ed Farina, new general sales manager.

Harvey Brown, who has been ill for several months, is reported to be improving rapidly now, and is expected to soon be back on the job again.

CALIFORNIA-OREGON NEWS

Lewis H. White, vice president of the California-Oregon Paper Mills at Los Angeles, is sporting a fine new tan Buick sedan, the latest of a long line of Buicks under White ownership.

Nils Teren, Portland executive, visited the plant toward the end of March, and F. W. Leadbetter, head of the company, was also here recently on one of his frequent trips to the southern mill.

VANCOUVER KRAFT BONDHOLDERS ARRANGE SETTLEMENT PLAN

On April 1st the bondholders' committee working on a new financing plan for the Vancouver Kraft Company, Limited of Port Mellon, B. C., arranged a settlement proposal affecting the Columbia River Paper Mills, the California-Oregon Paper Mills of Los Angeles, the Oregon Pulp & Paper Company of Salem, Oregon, as well as the Vancouver Kraft Company.

Holders of the 6½ per cent first mortgage gold bonds of the Vancouver Kraft Company were told the settlement provides that the California-Oregon Paper Mills issue $300,000 in twenty-year 4 per cent bonds to be retired at the rate of $20,000 annually, starting six years from the date of issuance. They will be a first lien.

For each $1,000 bond of Vancouver Kraft, there will be exchanged one bond of California-Oregon Paper Mills, one share of preferred stock in Vancouver Kraft, seven shares of Vancouver Kraft common, and an obligation upon California-Oregon Paper Mills to deliver two shares of preferred and four of common of a new corporation which would be formed if the present bonds of Vancouver Kraft are foreclosed and properties acquired by the new corporation.

The California-Oregon Paper Mills of Los Angeles is a specialty paper mill of 40 tons daily capacity. It operates two 90-inch harper fourdriniers and one 90-inch fourdrinier. The plant also contains one 120-inch vegetable parchment machine. The papers made largely fall into the following groups: Manila, kraft and sulphite wrappings, white and colored tissues, oiled, plain and printed fruit wrap, plain and printed waxing papers, tire wrap and vegetable parchment.

Mr. F. W. Leadbetter is president of the California-Oregon Paper Mills; Mr. Lewis H. White is vice-president and treasurer; Mr. A. S. Fleming is secretary, and Mr. V. P. Cole is superintendent.

PACIFIC STRAW PAPER MAKING BOXES

The Pacific Straw Paper & Board Co., Longview, is now manufacturing a line of folding boxes, and recently displayed them in various coast cities. Several years ago they started making colored boards which are especially suitable for this type of box.

Charles Schaub, president of the company, and Carl Scott, box maker, were in Los Angeles the middle of March while a display was held at the Biltmore Hotel, and Aubrey Sweet, San Francisco representative, also came down for a few days. The display was previously held at Portland and San Francisco.

The company's line is handled in Southern California by Johnson, Carvell & Murphy.

KRAFT PULP PRACTICALLY SOLD OUT FOR 1936

Prime kraft pulp for forward shipment from abroad to the United States were reported early in March to be unavailable in sizable tonnage.

Any odd lots of prime kraft pulp on the Atlantic seaboard or for fairly early delivery was priced at $40 per ton ex dock, New York. Prime kraft for shipment from abroad during 1937 was quoted at from $37 to $38 per ton ex dock, New York.

FORTIER NEW EVERETT SUPERINTENDENT

Mr. W. J. Pilz, vice-president and general manager of the Everett Pulp & Paper Company of Everett, Washington, recently announced the appointment of Mr. L. P. Fortier as superintendent. Mr. Fortier assumed his new duties the middle of April, and he comes to the Pacific Coast with a record of accomplishment in the paper industry of the Middle West and East.

Mr. Fortier succeeds Mr. James G. Ramsey who passed away suddenly on February 13th after nearly three years as superintendent of the Everett Pulp & Paper Company's mill.

A practical paper maker since 1910, Mr. Fortier brings to Everett a wealth of experience in the manufacture of high grade papers, particularly in the making of book papers, the principal product of the Everett Pulp & Paper Company.

In 1910 Mr. Fortier started as a paper maker with the Orono Pulp & Paper Company at Orono, Maine, and later worked for the Eastern Manufacturing Company of Brewer, Maine, and the American Writing Paper Company at Holyoke, Massachusetts, both makers of fine papers.

Then followed a period of fifteen months service in the United States Army during the World War. Upon his discharge from the army, Mr. Fortier became superintendent of the Groveton Mills of the Brompton Pulp & Paper Company, at Groveton, N. H., where he remained for four years. From Groveton Mr. Fortier moved to Kalamazoo, Michigan, to become associated with the Bryant Paper Company, makers of book papers. After three years with Bryant he became general superintendent for the Michigan Paper Company of Plainwell, Michigan, makers of book and specialty papers, leaving there after eight years of service to become superintendent for the Everett Pulp & Paper Company at Everett, Washington.

Mr. Fortier's family will accompany him to their new home in Everett.

PACIFIC COAST PAPER MILLS RE-ELECT OFFICERS

The Pacific Coast Paper Mills of Bellingham, Washington, held the annual meeting early in March and all officers and directors were re-elected for another year.

Officers are: J. J. Herb, president; P. J. Herb, vice-president; William McCush, treasurer, and Victor A. Hughes, secretary.

Directors are: J. J. Herb, P. J. Herb, William McCush and George H. Bacon, all of Bellingham; John D. Watson of Appleton, Wisconsin; E. M. Herb and H. M. Lord of New Westminster, B. C.

It was reported at the meeting that the mill in Bellingham is operating steadily, employing approximately 110 persons on four six-hour shifts.

Mr. John D. Watson, a director of the company, always comes West from Appleton, Wisconsin, to attend the annual meetings. He is secretary of the Wisconsin Wire Works of Appleton.

WESTERN WAX INSTALLS BAG MACHINE

The Western Waxed Paper Co., Los Angeles, last month installed a new bag machine for making waxed paper bags, and it is now in full production under supervision of manager Walter Voltz. The company is producing both plain and printed bags, in sizes from 2½x2 x6-inches, to 12x12x23 inches.

George Wieman, salesmanager for Western Wax, left the end of March for a trip to Phoenix, Tucson and El Paso.

FIBREBOARD MAKES NEW EGG CARTON

At the Fibreboard plant at Vernon (Los Angeles), egg cartons are now being made with a new non-slip cover lock, instead of the former familiar self-locking top. This new feature prevents the top coming loose and letting the eggs fall out at the wrong time. It was designed by T. F. Barnes, who has charge of the model grocery store at the plant.

OGDEN MINTON AND EERO KALAJA VISIT COAST

The middle of March Mr. Ogden Minton, inventor of the Minton Vacuum Dryer, visited the Pacific Coast accompanied by Mr. Eero Kalaja, Finnish pulp and paper mill engineer.

After a visit to several mills including the Weyerhaeuser Pulp Division sulphite mills at Longview and Everett, Washington, where Minton Vacuum Dryers are installed, the two men returned East from Portland.

Mr. Kalaja completed last October the construction of the Kaukopaa kraft pulp mill of 240 long tons per day capacity at Kaukopaa, Finland. It is in southeast Finland, one hundred miles from the Russian border.

He is now preparing plans for a 300 short tons per day kraft pulp mill for the Oulu-Osakeyhtio at Oulu, Finland. Construction is to begin in May of this year shortly after Mr. Kalaja returns to Finland. The mill will be ready to operate in September, 1937.

Mr. Kalaja as a consulting pulp and paper mill engineer specializes in kraft pulp and paper mills. Besides the Kaukopaa mill he has designed and constructed the Kemi kraft mill and the Enso-Gutzeit kraft mill.

Kraft pulp is the branch of the industry due for further expansion in Finland according to Mr. Kalaja. Large stands of pine timber are available to support a larger kraft industry. Mr. Kalaja said that sulphite pulp production in Finland had about reached its maximum on a permanent basis unless exports of Finnish spruce to Germany were stopped. In which case it would be possible for Finland to add approximately 150,000 tons per year of sulphite pulp to its present production.

Very little Russian wood is brought into Finland, Mr. Kalaja said, most of it going to Germany.

Mr. Minton said that the Minton Vacuum Dryer installed in the Kaukopaa kraft pulp mill completed last October was the largest pulp, paper and board machine in the world.

PUGET SOUND STOCKHOLDERS REELECT OFFICERS

The annual meeting of the stockholders of the Puget Sound Pulp & Timber Company was held April 7th at the company's general offices, Bellingham, Washington. Directors elected were: Dr. W. C. Kyes, Bellingham; Ossian Anderson, Bellingham; Perry S. Knight, Bellingham; H. M. Robbins, Bellingham; Robert Evans, Seattle; Ralph H. Miller, Seattle; Peter Schmidt, Olympia. Officers elected for the coming year were Ossian Anderson, president; Perry S. Knight, vice-president; L. Turcot, treasurer, and H. M. Robbins, secretary.

Mr. Anderson announced that the logging operations of the company with headquarters at Clear Lake, Washington, would continue under the supervision of Perry S. Knight, the pulp mill at Bellingham under the direction of Ralph Roberg and James Fagin at Anacortes, Washington, would remain in charge of the pulp mill at that point.

The meeting of the stockholders at Bellingham was well attended giving evidence of the interest which the shareholders have long shown in the progress of the company.

RAINIER ADDS ANOTHER ENGINEER TO RAYLIG PROMOTION

The Rainier Pulp & Paper Company of Shelton, Washington, recently added Mr. W. A. McKenzie to its promotion staff.

A short time ago Mr. Wallace Drummond, highway engineer, was employed to assist in the development of markets for Raylig, Rainier's road surfacing material made from waste sulphite liquor.

Roads adjacent to Shelton which have been treated with Raylig were found upon a recent inspection to have resisted the cold weather of February in much better shape than did the roads not treated with Raylig.

COOS BAY ADDS TO WAREHOUSE CAPACITY

The Coos Bay Pulp Corporation of Empire, Oregon, completed an addition to its warehouse early in March which added storage capacity of approximately 700 tons.

J. D. ZELLERBACH ELECTED TRUSTEE

At a recent meeting of the board of trustees of the Institute of Paper Chemistry, Appleton, Wisconsin, Mr. J. D. Zellerbach, executive vice-president of the Crown-Zellerbach Corporation, and president of Fibreboard Products, Inc., was chosen as a new member of the board.

PRODUCTION RATIOS UP

The American Paper & Pulp Association's weekly production ratio report shows the month of January, 1936, to have been 76.1 per cent compared to 65.8 per cent in January 1935.

February, 1936, showed 78.0 per cent while February, 1935, was 70.0 per cent.

SEAMAN VISITS RAINIER

Mr. Stewart Seaman, director of sales for the Rainier Pulp & Paper Company with headquarters in New York, was a recent visitor at the mills in Shelton, Grays Harbor and Port Angeles. While New York is Mr. Seaman's base of operations he travels all over the world in the interests of Rayonier pulp.

B. C. PULP REPORTS LOSS FOR 1935

British Columbia pulp companies depending heavily on Far Eastern markets took a heavy loss last year.

Because one of the company's best markets was disrupted by the trade war between Canada and Japan, the British Columbia Pulp & Paper Company's earnings were somewhat reduced and the operating profit was $215,404 as compared with $676,956 the previous year, according to President Lawrence Killam.

However, conditions are much more favorable now and the coming year should reflect them in the company's operations, Mr. Killam believes. Canada's quarrel with Japan is over and sales to the Orient are beginning to show improvement.

Annual statement of B, C, Pulp & Paper allows $9,019 for depletion ot timber limits. Among the items of income are listed $31,682 from investments, including $23,702 from the company's own bonds; $43,579 profit arising from redemption of the company's bonds during the year and $8,170 profit on sale of investments.

Total income of B. C. Pulp was $298,834 compared with $706,834 in the previous year. After bond interest of $320,865, depreciation of $200,00, $31,707 legal fees and executive remuneration and $3,000 directors" fees, making a total deduction of $555,573, the loss for the year is shown at $256,738, which compared with a loss of $21,620 in 1934.

The deficit as at December 31, 1934, amounted to $804,538, but an adjustment of provincial taxes in respect to prior years brought it up to $831,639; addition of the loss for 1935 brought the deficit account as at December 31, 1935, to $1,088,377.

The balance sheet shows current assets at $1,286,209, which is $830,182 in excess of current liabilities. A year ago previously current assets were $1,147,207 in excess of current liabilities. Inventories at $898,374 compare with $1,027, 012 at the close of 1934.

"During the past year it became necessary to seek new customers in a number of different countries, due to shipping troubles on the Pacific Coast and which caused several companies to cancel bookings at Canadian ports," Mr. Killam reported. "This difficulty was in addition to the prohibitive tariff charged against Canadian pulp by the Japanese government. Financial difficulties in China also affected our sales to that country. The diversion of business to less natural markets had an unfavorable effect on our business, and this condition will probably adversely affect our earnings during the first part of the present year, but eventually trade should find its normal level again."

Other features of the B. C. Pulp statement are summarized as follows:

Investment account at $195,273 compared with $221,090 a year previously comprises $20,000 in Dominion guaranteed bonds (market value $21,800); $247,500 par value of the company's own 6 per cent bonds at cost, $124,712; $71,900 par value of the company's own 7 per cent bonds at cost $29,523, making a total of $154,235 from which is deducted $21,038 deferred interest on the 7 per cent bonds, leaving balance sheet valuation of the company's own bonds held in investment account at $175,273.

Property account after $69,827 for depletion and $2,598,174 for depreciation is shown at $6,448,661 against $6,426,160 a year previously. Deferred charges of $52,030 bring total assets to $7,982,173.

Current liabilities at $456,027 are made up of $160,000 in secured bank loan a reduction from $210,000 a year previously; $236,894 accounts and wages payable; $31,800 accrued interest on bonds and $27,333 in reserve for provincial income taxes. Other liabilities are made up of bonded debt at $4,625,400 against $4,766,400 a year previously; 6 per cent bonds due 1950 having been retired to the amount of $141,000 during the year; deferred liability, interest on 7 per cent bonds payable Nov. 1, 1940, $422,924; reserve for contingencies, $10,000; capital stock, $3,556,200 made up of 5,562 shares of $100 each in 7 per cent cumulative preference shares, redeeemable at 105 on three months' notice (dividends in arrears since Aug. 1, 1931); and 100,000 common shares of no par value. Contingent liabilities to amount of £34,336 consisting of bills receivable discounted, are not included in the statement.

"Payment of interest and sinking fund requirements on the six per cent first mortgage bonds was made in full. A meeting of the holders of these bonds, held in October, authorized a change in the trust deed to permit expenditures advisable for the protection of future earnings.

"Payment of interest due on May 1, 1935, on the seven per cent general mortgage bonds was made at that time. A meeting of holders of these bonds authorized that payment of interest due May 1, 1932 to May 1, 1937 inclusive, with the exception of the semi-annual instalment paid May 1, 1935, be postponed until November 1, 1940, and that sinking fund payments due prior to November 1, 1941 be cancelled.

"These actions of the bondholders have been of great assistance to the company.

"Holders of voting trust, certificates may now exchange them for common share certificates.

"The loss for the year is $283,838.78, after allowing for interest on bonded debt, and after provision for depreciation and depletion. This loss includes $27,100.45 for provincial taxes in respect to prior years, due to adjustment of depreciation allowances.

"$141,000.00 of six per cent first mortgage gold bonds were retired through the sinking fund.

"Current assets as at December 31, 1935 were $830,181.92 in excess of current liabilities."

BAILEY JOINS INSTITUTE OF PAPER CHEMISTRY

Dr. A. J. Bailey, who received his doctor's degree in forestry from the college of forestry, University of Washington,on March 20th, left immediately for Appleton, Wisconsin, to become associated with the Institute of Paper Chemistry as research assistant in wood technology.

Dr. Bailey, while studying at the university performed considerable research on the chemical and fibre composition of West Coast woods.

B. C. MEN APPOINTED TO FORESTRY ASSOCIATION

Mr. A. E. McMaster, vice-president and general manager of the Powell River Company, and Mr. C. M. Bartram of the Bartram Paper Products of Vancouver, B. C., were recently selected as directors of the Canadian Forestry Association.

Mr. O. A. Jorgenson, treasurer of the British Columbia Pulp & Paper Company was appointed to the executive committee of the association.

NATIONAL ANILINE MOVES SAN FRANCISCO OFFICE

National Aniline & Chemical Co. has moved its Pacific Coast headquarters at San Francisco from 145 Second Street to new and larger quarters at 517 Howard St. They were in the Second Street building 11 years.

R. Waldo, Pacific Coast manager of the company, says the move was made necesary by the growth of business. William McLaughlin is assistant manager at San Francisco and the Pacific Northwest business is handled by R. S. Carey, located at 646 North Thompson Street, Portland.

LONGVIEW STARTS VOCATIONAL CLASSES IN PULP AND PAPER

The vocational department of the Longview, Washington, public schools began on April 14th a series of classes embracing a general survey course of pulp and paper manufacturing with Mr. George H. McGregor as lecturer and conference leader.

Mr. McGregor, who is technical director for the Pulp Division Weyerheauser Timber Company of Longview, was formerly an instructor at the Institute of Paper Chemistry at Appleton, Wisconsin.

The classes are open to everyone in Longview interested in learning more about the pulp and paper industry, and they offer an opportunity which is being made available for the first time through the progressiveness of the Longview public schools.

The survey class will last for twenty weeks. Classes will be held every Tuesday at both 10 a. m. and 8 p. m. at the R. A. Long High School. By giving the same class twice men who are working on different shifts in the mills will find it possible to attend.

Following are the subjects to be covered in the course under Mr. McGregor's direction: Pulping Processes; Pulp Bleaching; Refining Equipment; Paper Machines; Paper Machine Drives; Paper Finishing; Paper Sizing; Paper Fillers; Paper Dyeing; Paper Classification; Tree Identification; Wood Identification; Log Breakdown and Chipping; Lignin and Cellulose.

GERMANS INVESTIGATE PRINCE RUPERT PROJECT

Plans of Canadian-American Pulp & Paper Company to build a mill at Prince Rupert, B. C., are moving ahead at a satisfactory pace, according to Managing Director Frank L. Buckley, but a good deal of preliminary work remains to be done before construction contracts can be let.

Mr. Buckley, accompanied by Edward A. Thompson of San Francisco, one of the company's directors, and Dr. Hellmuth Muller-Clemm and Dr. C. A. Schenck, made a trip to Prince Rupert this month to look over the Prince Rupert site. They inspected the big drydock property which is to serve as the mill site and which Canadian American has taken over from the Canadian government, and Mr. Buckley explained the company's project in detail. Mr. Muller-Clemm and Dr. Schenck also had an oportunity to see for themselves some of the pulp timber of the Skeena district which it is proposed to utilize in manufacture of bleached sulphite and other pulp.

Mr. Muller-Clemm is technical director of Waldhof Zellstoff Paperfabrik of Mannheim, Germany, and Dr. Schenck is late director of the Biltmore School of Forestry, making his headquarters at Darmstadt. Both men are recognized as among the foremost authorities on pulp and paper in continental Europe and came to the coast at the invitation of Mr. Buckley. They showed much interest in the Prince Rupert project and said that here in the Pacific Northwest much of the future development of the pulp and paper industry must be centered.

Whether the Germans are to become associated with the Canadian-American company has not yet been disclosed. Their primary purpose in coming to the coast at this time—Muller-Clemm often visits this part of the world as a practical pulp man interested in mill operations everywhere—was one of investigation, and they feel that they have obtained a clearer picture than ever of the coast's posibilities as a pulp manufacturing field.

Mr. Buckley returned recently from Europe, where he conferred with several pulp and paper men and capitalists. Canadian-American will have international backing, and it is probable that European capital will be in the project as well as Canadian and American.

Mr. Thompson is the first of the American directors to visit the site of the Canadian American mill and he was favorably impressed with the plans. He is a director of Western States Life Assurance Company, living in San Francisco, where incidentally most of the other directors of the company reside.

Mr. L. A. DeGuere, consulting engineer for Canadian-American, who has drawn the plans for the mill, visited Vancouver for a few days following his return from New Zealand, and went over various details connected with the project with Mr. Buckley and Mr. Thompson.

ST. HELENS NET PROFIT DECLINES

The annual report of the St. Helens Pulp & Paper Company of St. Helens, Oregon, for the year 1935, shows a decline in net earnings from 1934 of $84,369.

The 1935 statement showed net earnings of $155,828 as compared with net earnings of $240,197 in 1934. Both net earnings statements were after deductions for depreciation, taxes and interest.

However, during the year the company retired its entire issue of 6½ per cent first mortgage bonds, which at the end of 1934 had shown on the report as totalling $518,000. In place of the first mortgage bonds the 1935 report shows bank loans of $375,000. The net reduction of the company's debt during the year amounted to $143,000.

The profit and loss statements for 1934 and 1935 roughly compare as follows: 1935 earnings before charges were $429,977 compared to $522,419 in 1934. From these were deducted in 1935 a depreciation charge of $189,481 and a 1934 depreciation of $183,221; bond interest discounts and premiums in 1935 totalled $54,007 and in 1934 $43,053; provision for taxes in 1935 was $30,660 and in 1934 $55,947. Total charges in 1935 were $274,149 and in 1034 $282,-222.

Earned surplus in 1935 was increased by $35,868, the entire difference between the net profit of $155,828 and the $119,960 paid in dividends. The earned surplus account rose in 1935 from $1,199,733 to $1,235,601. During the year three dividends of 20 cents each were paid the total being the same as was paid in 1934. The total depreciation account increased in 1935 from $1,153,-545 to $1,336,258.

B. C. LEGISLATURE PASSES ACTS AFFECTING PULP INDUSTRY

Considerable new legislation affecting the pulp and paper industry was passed at the recent session of the British Columbia legislature in amendments to the Forest Act introduced by Hon. A. Wells Gray, minister of lands.

One of the amendments provided that wood cores in which paper is rolled in the shipment of newsprint and other pulp products should be excluded from the definition of "saw timber." Timber used in the manufacture of woodpulp and paper will also be excluded from this classification.

Another section of the bill deals with ground rental and forest protection taxes now being charged on an acreage basis on timber sales. The provision in the act for eliminating any cutoff areas of 640 acres relieving the holder of charges on such areas has been changed to read "640 acres or more."

A section of the law which provides for one-half rental on "any license" which is not timber land is changed to read "any license other than a pulp license."

The house also extended the present royalty rates on timber for a further period of one year to the end of December, 1937, and the increased royalty is postponed to the year 1938.

Existing woodpulp leases covering a thirty-year period from 1914 expire September 4, 1944, and the new bill will enable the issuance of wood pulp leases for a period of eighteen years from September 4, 1936, to September 4, 1954, and thereafter for consecutive and successive periods of twenty-one years. This, in effect, perpetuates the existing thirty-year leases.

PREDICTS FURTHER PULP DEVELOPMENT

The future will see steadily increasing development of the pulp and paper industry in British Columbia and more and more will the forests be diverted to the use of pulp manufacturing rather than lumber, according to R. V. Stuart, secretary-manager of the B. C. Loggers Association.

"The age of fabricated wood, fibre board, pulp, rayon and other cellulose products has already arrived," said Mr. Stuart, addressing members of the forestry committee of the British Columbia legislature recently. "These products can be made from small trees. Our British Columbia forests consist of some of the finest sites for the rapid growth of softwood timber suitable for the manufacture of high-grade cellulose commodities, and our problem, it seems to me, is to maintain these forests in a productive, thrifty state, rather than to impede the cutting of timber now mature, ready to cut and needed for present industries."

Mr. Stuart was making a plea for a far-sighted forest policy, claiming that it was useless and not economic to discourage the cutting of mature timber now. He stated that within twenty or thirty years most of the mature coast timber in British Columbia would be cut at the present rate of sawmill production, but that this development should not be regarded as loss. Natural reforestation would bring a new crop and this would be suitable for pulping purposes. The timber industry in future years would get its raw material from small trees—twenty to forty years old. It is only when the mature and deteriorating timber is removed that the young growth that must provide the payrolls of the future can have a chance to develop.

B. C. MAY REDUCE TIMBER ROYALTIES

The British Columbia government is considering the advisability of reducing timber royalties which today, with log prices averaging $10.74 per thousand, are the same as when log prices averaged $16.68 in 1924.

If the old rate was considered adequate and justified by conditions, the present rate must be excessive, timber owners contend.

According to Chief Forester E. C. Manning says that the government has received a proportionately greater revenue from timber development in the last decade than the logging industry and timber holders.

CAMAS PAPER MAKERS BALL A SUCCESS

The second annual Paper Makers Ball held at Camas February 29th was a success in every way. Approximately 280 tickets for couples were sold and over 500 persons attended the affair which was sponsored by the local of the International Brotherhood of Paper Makers.

The Women's International Label League had charge of the sale of refreshments and also reported a profit.

GERMANY'S PULPWOOD RESOURCES

The German paper industry has always relied on foreign sources of supply of a substantial part of its pulpwood requirements. In many fluctuations or demand it was the foreign supply that was affected whereas the domestic purchases were more or less regular. Thus Germany's pulpwood imports may be said to reflect, in an exaggerated manner, the course of industrial activity of the paper industry.

Sixty-six percent of the national pulpwood requirements were imported in 1929. The subsequent depression brought about retrenchments in pulpwood purchases in which foreign share was curtailed much more radically than the domestic. As a result, the proportion of imported pulpwood sank to 50 percent of the total in 1930 and as low as 44 percent of the total in 1932. With the improvement in business in 1933, imports of pulpwood rose again to 57 percent of the total, which share has since risen still further. During the first eleven months of 1935 German imports of pulpwood attained a figure of 2,680,979 metric tons, a larger quantity than in 1929, when 2,357,224 tons were imported during the corresponding period.

This unusual supply of foreign pulpwood was only partly justified by the increased requirements on the part of the German paper industry. The rapid expansion of the rayon industry and other activities requiring wood cellulose have doubtless contributed greatly to these heavy importations. At the same time steps have been taken to increase the domestic supply. A 150 percent cut was ordered by the government to be effected in state forests in 1935 and municipal and private owners were requested to follow this example. For the year 1936 the same ratio has been prescribed. The paper industry requires for the most part spruce and a relatively small quantity of pine. In order to stretch the existing supply as far as possible, orders have been isued to forestry authorities to spare spruce for the paper industry by withholding it from uses for which it is not essential. Sizes and qualities which do not fetch more favorable prices by being sold as building lumber, must likewise be reserved for the wood pulp industry.

An important obstacle to a more general use of German wood by the domestic paper industry has been seen in the exorbitant price ideas of the German suppliers. This has been amended by the recent government action in empowering the Reich Forest Administrator to regulate the annual cut, the sale, and the prices of all products of forestry and the lumber industry. To this end he is authorized to organize all German establishments in the forestry and lumber industry into a national association on the well-known mandatory principle. The work of the forest administrator was still in its initial stage at the end of the year, and was not a factor in the conditions of the pulpwood market in 1935. (W. S. Jesien, American Consulate General, Frankfort.)

CARLSON BACK TO WORK

A. E. Carlson, manager of the board division of the Pioneer-Flintkote Co., Los Angeles, was home ill early in April for a week, but at last reports was ready to return to the job fully recovered.

B. C. PULP & PAPER'S CHEMIPULP SYSTEMS NEARLY COMPLETED

Installation of the Chemipulp system at the Port Alice and Woodfibre mills of the B. C. Pulp & Paper Company will be completed by the end of this month, according to Lawrence Kilam, president.

Mr. Killam reports substantial improvement in the market for pulp in Japan as a result of the new tariff agreement with Canada.

Meanwhile in eastern Canada textile manufacturers who made the chief objections to the agreement with Japan because of competing rayon shipments from the Orient are facing an investigation initiated by the Canadian government which is determined to find if there was justification for the Canadian mills being shut down after trade with Japan was re-established.

WEYERHAEUSER POWER LINE STARTED

On March 16th the Puget Sound Power & Light Company began the construction of a branch power line to the new Weyerhaeuser pulp mill at Everett, Washington. The power line and transformer station which will be used for auxiliary power only, will require about three weeks to complete.

CAMAS ADDING KRAFT DIGESTER

Crown-Willamette Paper Co., Camas, Wash., is building an addition to the kraft plant and installing a fourth digester to increase the capacity of the plant approximately one-third, from 109 tons to 150 tons. Two of the present digesters are also being replaced with new ones. The paper machine capacity has exceeded the pulp capacity for some time and the improvements are to bring these into better balance as well as improve the quality of the kraft. Some improvements are also being made in the paper machines.

INTERNATIONAL RUMOR

International Power & Paper Company of Newfoundland is reported to be interested in construction of a pulp mill in the Gander area of Newfoundland. Representatives of the company have gone to England to confer with Alan Butler, with whom chief interest in the property is now vested.

The Gander area comprises about 5,000 square miles of timberland granted to the Reid Newfoundland Company in 1898 in payment for construction and operation of a cross-country railroad. The territory was logged for saw timber up to 1908, but since then has been practically untouched.

GERMANY NEEDS PULPWOOD AND WOOD PULP

Say Drs. Schenck and Muller-Clemm

Germany needs a dependable source of wood pulp, and so to the Pacific coast this month came Dr. C. A. Schenck, outstanding forest conservation leader of continental Europe, and Dr. H. Muller-Clemm, technical director of Waldhof Zellstoff Paperfrabrik of Mannheim, one of the largest pulp manufacturing concerns of Germany.

The two distinguished Germans spent several days in British Columbia, visited pulp mills, inspected pulpwood limits and conferred with forestry officials and paper executives, but when they left for the east again they still kept to themselves any plans they may have formulated to attain the primary object of their visit.

"The German mills are manufacturing alpha-cellulose pulp for the production of high grade rayon," said Dr. Schenck. "Our own German forests, notwithstanding our efficient conservation methods, are inadequate to meet the demands of industry. We are compelled to import most of our wood for pulp—about 60 percent, I should say. And at present we are depending chiefly on Russian forests for that 60 percent. Obviously that is not an ideal arrangement. Apart from the political tension that exists today, it is not a satisfactory situation for one country to be at the mercy of one other foreign country in the supply of a vital raw material. We receive some pulp from other Baltic countries, but these countries are still actuated by nationalistic policies that discourage the export of raw materials that might be more economically converted into the finished product within their own borders."

To ship pulpwood all the way from the Pacific Northwest to Germany for manufacture would be out of the question for many reasons, but the possibility of shipping pulp, especially for the higher grades of paper, is something that justifies the closest study, according to Dr. Schenck, and for that reason the investment of German funds in pulp mills on this coast is by no means remote. Germany must have pulp and the Pacific Northwest is recognized as one of the world's most promising sources of pulp timber, with the additional advantage of cheap waterpower, a stable labor market, tidewater location for mills and relatively low-cost transportation.

Dr. Schneck, world renowned for his progressive ideas on forest conservation, thinks that loggers in the Pacific Northwest have "the right idea" and that they had adopted the most efficient means of getting out timber. He has little patience for those who condemn high-lead or any other specific system of logging.

"Methods are immaterial," said Dr. Schenck, "provided that the new crop is afforded sufficient protection. So long as a certain balance is maintained between the cut and the growth there is nothing serious for you to worry about. Your present system of logging is an economic necessity. To attempt to change it would be an act of folly."

Dr. Muller-Clemm believes that the day is fast coming when timber as a source of lumber will be secondary to its importance in supplying the world with pulp and composite materials. The by-products of today will be the primary products of the future, he believes, and with sane conservation methods the Northwest's pulpwood forests should exist in perpetuity.

JAPANESE DISCLAIM INTEREST IN COAST PULP WOOD

Oji Paper Company, premier Japanese pulp and paper concern, has no interest in pulpwood timber on this side of the Pacific and has no designs on extension of its holdings in this part of the world, according to M. Fujihara, who with other officials of Oji paid an extensive visit to the Pacific coast last summer. Mr. Fujihara, who is president of Oji, says that his tour was purely an educational one. He wished to see for himself the pulpwood resources of Alaska, British Columbia and the coast states and the facilities available to utilize them. Apart from that he was not interested.

The question of exporting pulpwood from British Columbia to Japan came up during a recent session of the provincial legisalture, when it was announced that the government would continue to exercise its own discretion as to the volume of log exports allowed. It was explained that these exports are restricted only to logs otherwise not easily disposed of, and that British Columbia sawmills were protected.

When it was claimed that some of the logs were of pulpwood, destined to Japanese mills, it was denied. Japan does import a considerable quantity of logs from British Columbia, but they are confined almost entirely to fir and cedar. Very little spruce is included, and this is said to be used almost exclusively for structural purposes.

Oji Paper Company meantime is said to be negotiating with the Dutch government for timber concessions in Dutch Malaysia. The deal was virtually closed when oil was discovered on the land and the transaction was revoked, although it is understood that other suitable timber will be obtained elsewhere in the same country. The wood is said to resemble fir and may be difficult to handle in pulp-making processes. At present Japan depends chiefly on Saghalien as an Asiatic source of pulpwood. Its development of pulpwood of Manchoukuo has been negligible, and from all accounts Japan will be obliged to depend for pulp and paper from North America for a good many years.

CONDITION OF JAPANESE NEWS MARKET

Decline of the yen is the only unfavorable factor seen in the Japanese newsprint market by Harry Pim, sales manager of Pacific Mills, Ltd., and H. J. McKenzie, manager of Export Sales Company, Far Eastern sales outlet for Powell River Company. Both Mr. Pim and Mr. McKenzie will remain in the Orient for at least a couple of months. Newsprint has been selling in good volume and pulp imports are rapidly gaining from Canada as a result of the friendly settlement of the tariff dispute.

DECREASE IN JAPANESE WOOD PULP PRODUCTION IN FOURTH QUARTER

Japan's production of chemical and mechanical pulp during the last quarter of 1935 reached a total of 178,375 short tons, slightly below the output of the preceding quarters but above the total for the first three months of the year and slightly above the corresponding quarter in 1934. Production of wood pulp during the entire year is reported at 710,088 short tons as against 680,515 tons in 1934 and 644,675 tons in 1933. Of the 1935 output, 367,558 tons represented chemical pulp and 342,530 tons mechanical pulp.

Production of paper and rayon in Japan during 1935 set new records in so far as volume of production was concerned, and predictions point to a moderate increase in 1936 over 1935. Domestic producers of pulp are anticipating larger imports of pulp for both rayon and paper making this year. The Oji Paper Manufacturing Company appears to have lost interest for the present in extending its operations in Manchuria.

INCREASED WOOD PULP CONSUMPTION IN JAPAN FILLED BY IMPORTS

Wood pulp imports during the last quarter showed considerable increase over the unusually low arrivals during the third quarter, although still falling 10 per cent below arrivals during the fourth quarter of 1934. Imports for the entire year totaled 301,607 short tons, an increase of 17 per cent over 1934. The 1935 imports were the largest thus far recorded and predictions in the trade are that a further increase for 1936 can be expected. The United States again ranked first as source of supply for wood pulp, 121,841 tons being recorded as coming from that country. Sweden, which supplied 56,524 tons stood next, Norway with 54,206 tons took third place, and Canada with 38,396 tons took fourth place. Imports from all of these countries, with the exception of Canada, increased.

INCREASE IN JAPANESE PAPER PRODUCTION AND SALES DURING 1935

Production of foreign style paper in Japan by the eleven companies which are members of the Japan Paper Manufacturers' Association reached a total of 218,900 short tons during the fourth quarter, bringing the total for the year up to 859,819 tons as against 795,737 tons during 1934. Sales for the same period increased from 802,942 tons to 840,335 tons.

The most important development in the paper industry during the last few months of 1935 was the increase in capitalization of the Oji Paper Manufacturing Company from 149,933,000 yen to 300,000,000 yen. This amount accounted for almost all of the new capital invested in the paper manufacturing industry in 1935. According to figures released by the Bank of Japan in its monthly bullein, the total new capital invested in the paper industry during 1935 amounted to 176,412,000 yen as compared with 171,512,000 during 1934. —Assistant Trade Commissioner Carl H. Boehringer, Tokyo.

B. C.-JAPANESE TRADE RELATIONS

Now that peace has been restored, in a trade sense, between Canada and Japan, the latter country is doing all in its power to resume commercial relations on a large scale, acording to Gordon W. Land of A. Cameron & Company of Kobe, Japanese trade agents for B. C. Pulp & Paper Company.

Mr. Land believes that relations between Japan and Canada will be on a friendlier basis than ever as a result of the new agreements between the two countries. He says that Japan is co-operating by complying with government instructions against flooding the Canadian market with low priced rayon goods—an eventuality which at first seemed to contain the germ of new friction.

ALBERT H. HOOKER, SENIOR, DIES

Mr. Albert H. Hooker, Sr., technical director of the Hooker Electrochemical Company and father of Albert H. Hooker, Jr., of the company's Pacific Coast organization, died at his home near Niagara Falls, New York, on March 9th, 1936, at the age of seventy. Mr. Albert H. Hooker, Jr., left Tacoma immediately by plane to attend his father's funeral.

Mr. Hooker was prominent for many years in the chemical industry. His scientific and business career began in 1888 following his study of chemistry at the University of Rochester and the Massachusetts Institute of Technology. From 1888 until 1905 Mr. Hooker engaged in chemical work concerning pigments, paints and colors, and through his contributions to the literature on these subjects became known as an authority.

In 1905 he entered the electrochemical industry and remained in it until his death. He occupied successively the positions of works manager and technical director of the Hooker Electrochemical Company at Niagara Falls during the period of its growth into one of the largest producers of electrolytic alkali, chlorine and chlorine products.

Mr. Hooker devoted his efforts during the World War to the manufacture of picric acid, chlorobenzene, and chemical products for gas warfare both for the American and French governments.

In 1920 the University of Rochester honored him with an honorary degree of master of science. Mr. Hooker was an original member of the New York state board for licensing professional engineers and land surveyors and was chairman of this board at the time of his death. He was a past director of the Power City Trust Company of Niagara Falls and a member of many scientific societies including the American Institute of Chemical Engineers, American Electrochemical Society, Buffalo Engineering Society, American Society for Testing Materials, Faraday Society, Society of the Chemical Industry, Institute of Chemical Engineers (English), Societe de Chimie Industrielle (French), Petroleum Institute, TAPPI and the American Chemical Society.

Besides his son Albert H. Hooker, Jr., he is survived by his widow, another son, Roger Walcott Hooker, and three daughters. Also surviving him are four brothers, Elon H. Hooker, H. M. Hooker Paul Hooker, Willard Hooker, and by two sisters.

B. C. COMPLETES SURVEY OF FRASER POWER

With a view to establishing the power possibilities of the Fraser River as a location for newsprint and pulp mills and other industries, the British Columbia government has recently completed a series of surveys.

These surveys have revealed that power development on the Fraser River at Lillooet, Soda Creek and Moran can add 2, 250,000 horsepower to the commercial needs of British Columbia whenever this energy is required. All three sites have been reported on favorably for industrial purposes.

FARM CHEMURGIC COUNCIL DISCUSSES WOOD UTILIZATION

Two hundred nationally known scientists, industrialists and agriculturists from eleven western states met at Fresno, California, March 26 and 27, as a part of the nation-wide program to advance the industrial use of agricultural products through applied science. The two-day conference was called by The Chemical Foundation and the Farm Chemurgic Council as one of a series of regional meetings.

The Farm Chemurgic Council, organized last May following a similar meeting at Dearborn, Michigan, has as its aims and purposes the coordination of the three fields of agriculture, science and industry; activating research, and through practical application of such research, the finding of new markets for American agriculture.

Of significance to the pulp and paper industry is the fact that the Chemurgic Council includes in the scope of its program the utilization of trees grown on American soil in the cellulose industries of this country and looks to the possibility of added acreage for the growing of pulping species. Mr. Francis P. Garvan, President of the Farm Chemurgic Council and better known as President of The Chemical Foundation has long worked for the development of domestic supplies of woodpulp and paper. Through his interest and financial support of the Pulp and Paper Laboratory under the direction of Dr. Charles H. Herty at Savannah, Georgia, considerable research has been carried on toward the utilization of Southern pine in the manufacture of pulp for white papers and rayon.

Dr. H. K. Benson, Department of Chemical Engineering, University of Washington, delivered a paper at the Fresno conference on "Industrial Uses of Wood" which outlined the available pulping species of the Pacific Coast, the progress of scientific research as applied to the utilization of Western timber, and the possibilities for further expansion of the pulp and paper and cellulose industries in this region as a result of low-cost hydro-electric power being developed adjacent to the abundant raw materials.

Mr. Carl Fritsche, Managing Director of the Chemurgic Council, visited the Pacific Northwest enroute to Dearborn, Michigan, to gain first-hand contact with the wood-using industries. In Aberdeen, Washington, he met many of the loggers and timber owners of the Grays Harbor district and spoke at a dinner meeting held there in his honor on March 30. In Seattle on the 31st Mr. Fritsche addressed the State Development Committee of the Chamber of Commerce at noon and the Seattle Section of the American Chemical Society at the University of Washington in the evening.

It is tentatively arranged that a Pacific Northwest conference of the Farm Chemurgic Council wil be held either in Spokane or Seattle some time in the early fall under the auspices of the Washington Planning Council. At such a meeting it would be possible to bring together men interested in research applicable to wood-utilization in industry.

Membership of the Farm Chemurgic Council at present includes, in addition to Mr. Francis P. Garvan, its President: Roger Adams, former president of the American Chemical Society; W. B. Bell, President American Cyanamid Company; Howard E. Coffin, Chairman of Board Southeastern Cottons, Inc.; Wm. J. Hale, Consulting Chemist, Dow Chemical Company; Dr. Charles H. Herty, Director, Pulp and Paper Laboratory; Wheeler McMillen, Editor, The Country Home; Charles M. A. Stine, Vice-President E. I. duPont de Nemours & Company; Louis J. Taber, Master, The National Grange and E. R. Weidlein, Director, Mellon Institute of Industrial Research. Dr. Harry E. Barnhard, Director of Research for the Farm Chemurgic Council, with Mr. Hugh C. White, Director of Publicity, visited the Pacific Northwest on their way to the meeting at Fresno.

POWELL RIVER NEWS

William Barclay, sales manager of Powell River Company, found business conditions much improved on a recent tour through the south western states, although he anticipates a continuance of drought conditions this summer. Mr. Barclay continued east to New York, where he was impressed with the steadily gaining momentum of business as reflected in auto sales and power company activity.

S. D. Brooks, president of Powell River Company, has been on vacation in southern California.

R. Bell-Irving, assistant general manager of Powell River Company, has returned from eastern Canada and New York, where he was concerned chiefly with technical matters pertaining to the mechanical facilities of his company.

Douglas Parker, who came west about a year ago to become assistant manager of the Powell River Company plant, has returned to Fort William, Ont., to take a higher position in the Thunder Bay Pulp & Paper Company, with which he was formerly associated. His successor at Powell River has not yet been named.

M'CLINTOCK VISITS LOS ANGELES

Frank McClintock of the Independent Paper Stock Co., San Francisco, spent a few days at the Southgate plant of Fibreboard Products, Inc., on one of his periodic visits with R. C. McCrystal, plant superintendent.

NEW CANADIAN DIRECTORY ISSUED

The 1936 National Directory of the Canadian Pulp and Paper Industries has recently been published by the National Business Publications, Ltd., of Gardenvale, Quebec. The revised edition contains detailed data on Canadian pulp and paper mills and lists converters and distributors of paper.

The Economic Importance of Farm Timberlands in Western Washington and Western Oregon

By H. M. JOHNSON*

The economic value of the farm timberlands has never been fully appreciated in any of the major lumber producing regions of the nation until such time as the extensive stands of virgin timber have been largely cut out. This has been the experience in the Northeastern, Lake, and Southern states, regions which have successively held the lead in lumber production. Although the farm timberlands have always been a source of fuel and to a lesser degree of farm maintenance material their real importance as a commercial source of timber products was not fully appreciated so long as large scale lumbering operations predominated. In 1929 the total value of the farm timberland products cut in these three regions amounted to $168,000,000, or about one-third that of all the lumber produced.

The nation's last great stand of coniferous sawtimber lies in western Washington and western Oregon. As would be expected in a region of extensive timbered areas there is a large acreage of timberland included in farm units. The 1930 report of the Census Bureau showed that the farms of this region included 693,354 acres of unpastured timberland and 2,103,262 acres of pastured timberland, a total of 2,796,616 acres. This represented about 44 per cent of the farm acreage or 36 acres of land, more or less timbered, per farm.

On the basis of the recently completed forest survey of this region, it is conservatively estimated that the stand of merchantable timber within the farm units amounts to 25 billion feet, log scale. There are also thousands of acres carrying heavy stands of reproduction, and of pole and sapling size material. Douglas fir, the major species of the region, comprises at least 90 per cent of this timber. Other species include western hemlock, lowland white fir, western red cedar, Sitka spruce, ponderosa pine, incense cedar, red alder, bigleaf maple, western ash, northern black cottonwood, and Oregon white and California black oak.

The total value of farm timber products cut in this region in 1929, as reported to the Census Bureau, was $5,510,444, an amount nearly equal to the value of the small fruit (berry) crop of the region this same year. This value was made up as follows: 711,307 cords of fuel-wood, valued at $3,208,432; 233,929,000 feet, log scale, of sawlogs, $1,454,318; 45,281 cords of pulpwood, $274,083; 1,227,832 posts, $134,863; 184,361 ties, $121,640; 142,747 poles and piling, $317,108.

During the past four years, cutting on these areas has progressed more rapidly than normal because of the low price of farm crops and the need of owners for ready money. As a result, some of the finest second-growth timber in the region is being sacrificed. The proper protection, utilization and management of these farm timberlands is of vital importance to the economic well being of the individual, the immediate community, and the state.

*Pacific Northwest Forest Experiment Station U. S. Forest Service, Portland, Oregon.

PRICE BROTHERS PROPOSALS

Pacific Northwest pulp and paper interests are closely watching negotiations for the acquisition of Price Bros. & Company, big Eastern Canadian newsprint company for whose control Lehman Bros. and Aluminium Ltd., are fighting in opposition to various Canadian and English capitalists.

The offer made by Pacona, representing Lehmans and Aluminium, Ltd., was to pay off the bondholders at par and accrued interest, liquidate the claims of creditors, take care of the receiver's and bondholders' protective committee's expenses, as well as leave a small balance available for the claim of Price Bros. Realty company bondholders.

The opposition bid is being sponsored by a syndicate comprising the London Daily Express (Lord Beaverbrook), Bowaters Paper Mills and Kitcat and Aitken. In addition a Canadian syndicate composed of five different houses, three in Montreal and two in Toronto, is interested in the undertaking. The basis of their offer is that the first mortgage bonds at present outstanding will be undisturbed. Arrears of interest, totalling about $2,000,000 would be paid in cash.

The creditors would also be paid in cash.

In order to take care of these obligations and provide the company with sufficient working capital it is proposed to offer $7,500,000 of general mortgage income bonds to the present stockholders and the unsold balance to the public.

THE GREAT LAKES DEAL

Reorganization by mortgage sale of Great Lakes Paper Company is reported to be closing with a movie ending, with everybody happy in the final fadeout after many reels of confusion and strife.

As an incidental development of the transaction the Ontario government is planning to put through new legislation to regulate the pulp and paper industry.

Settlement was effected by revision of the Gafaell-Aldrich plan for purchase of the Great Lakes assets. The publishers sponsoring the offer are not to receive dividends on their shares until newsprint reaches at least $45.30 a ton, compared with the present base price of $41.

The government has been assured that the Gafaell-Aldrich plan will not disturb the newsprint market. The new operating company will receive a charter as Upper Lakes Pulp & Paper Co. Court approval is regarded now as merely a formality.

Aim of the proposed new legislation is to restore control to the Ontario government of timber areas that have been allotted to concessionnaires, chiefly pulp and paper companies.

Terms of the sale of the Great Lakes Paper Company, Ltd., to Lynn E. Aldrich of Chicago and John E. Gefaell of Westfield, N. J., were approved March 30th by Justice J. A. McAvoy, subject to a change in language of one paragraph.

The amended terms will include two clauses which D. W. Lang, acting for the Ontario Minister of Lands and Forests, indicated would meet the government's objections.

GERMAN NEWSPRINT COMPETITION IN ORIENT

For the first time in several years German competition is affecting newsprint exports from this coast to the Far East. About seven years ago German paper was finding its way in large volume to China and South America and salesmen for Pacific Northwest mills found it difficult to quote prices that would meet the German bids. Then the Teuton product gradually vanished from those markets, only to reappear about five months ago, especially in China.

British Columbia newsprint exporters say that German paper is now the chief factor in competition in China. Because of the German system of "compensated marks" which is designed to control the flow of money from Germany and encourage other countries to buy German goods, German newsprint is virtually subsidized to the extent of about 35 per cent. Inasmuch as the quality of German paper, made from Russian pulpwood, is high and freight rates from the Baltic are low because all Nazi shipping lines are heavily subsidized, it is almost impossible to find an effective means of combating this new trade rivalry.

Because of its lax customs regulations, China has been the logical dumping ground for this German paper. In most countries where due protection is given against subsidized merchandise German newsprint has been unable to find access, but in only a few Chinese seaports is much attention given to this consideration, and the great Chinese newsprint market, steadily growing is absorbing increasing tonnage of German paper. The movement has been accelerated by the unofficial embargo that still prevails in some parts of China against Japanese goods. Japan has in the past sold large quantities of paper to China at low prices. This business has been diverted in large measure to German mills.

CANADA AND NORWAY SUPPLYING IMPORTS OF NEWSPRINT INTO MEXICO

The new semi-governmental paper importing company, with headquarters in Mexico City, has commenced to function, according to a recent report from Commercial Attache Thomas H. Lockett, Mexico City. So far purchases have been restricted to newsprint, which the company will resell to newspaper publishers in Mexico City at approximately 207.50 pesos per ton (metric ton of 2,205 pounds). Newsprint of domestic manufacture is being sold at 230 pesos per ton.

While the company has heretofore confined its purchases almost entirely to newsprint, it will turn its attention to other classes of paper from now on. During the first few months of the current year the company will buy approximately 1,000 tons of various grades of sized and super-calendered book papers. In addition, it will purchase considerable quantities of bond writing paper, envelopes ,and the cheaper grades of book paper. The technical experts of the company are convinced that the United States produces the best grades of bond, and super-calendered papers, and it is very likely that part of the order at least for these papers will go to United States manufacturers. On the other hand, the cheaper grades of book papers can be bought from European manufacturers at a price 15 to 20 per cent less than those quoted by American producers.

FINNISH TRADE WITH UNITED STATES

The Finnish Paper and Timber Journal for February 29th contains the following news item of interest to Pacific Coast pulp manufacturers.

Mr. Walter Grasbeck, general manager of the Finnish Cellulose Union, has just returned from a visit to the United States where he has studied trade conditions in general and the cellulose market in particular.

In an interview he states that there are many new indications of the high reputation that Finland has won in the United States and he was very pleased with the propaganda that is being done there with a view to increasing the knowledge of Finnish industrial products. Finnish cellulose is held in high repute and is well able to hold its position in the very keen competition in that market.

GROWTH IN FINNISH PULP AND PAPER PRODUCTION NOT DEPLETING NATIONAL FORESTS

Combined exports of wood pulp, paperboard and paper from Finland have grown from 727,000 metric tons in 1927 to 1,471,000 metric tons in 1935. It is not admitted in pulp and paper industry circles that the raw materials are being consumed at a greater rate than warranted by the annual growth. Increasing quantities of sawmill waste, small timber and wood that cannot be used for other purposes, are being utilized by the pulp and paper industries. As the state controls a considerable part of these industries, being at the same time to a large extent responsible for the management of the country's timber resources, it does not seem likely that the pulp and paper industries would be permitted to endanger, by their expansion, the results of the work carried on by the government and private organizations with a view to ensuring the continued existence of a sufficient supply of merchantable timber. (Erkki Kapy, American Consulate General, Helsingfors.)

NEW ADDITIONS AND EXPANSIONS TO JAPAN'S PAPER MANUFACTURING INDUSTRY

Noteworthy developments in Japan's paper industry during the end of the year were the installation by several companies of additional equipment for producing new types of paper and board. Mishima Paper Company's expansion work was completed and it began to produce cigarette paper for the Government Tobacco Monopoly Bureau at the rate of 260,000 pounds monthly. The Asahi Paper Company also added sulphite paper of a very superior quality to its products. This company has been producing about 500,000 pounds of printing paper monthly. The Nihon Rayon Pulp Company, Limited, was installing up-to-date machinery for the manufacture of kraft paper and expects to commence production by April, 1936. The mill in Taiwan which is to produce insulating boards from bagasse is expected to begin operation shortly. Installation of the equipment for another company was completed during November and it has started production of printing paper and kraft paper with a total capacity of 700,000 pounds per month. (Assistant Trade Commissioner Carl H. Boehringer, Tokyo.)

NEW MAP GIVES VIVID FOREST PICTURE

Copies of a lithographed map of the northwestern quarter of Oregon showing in colors the principal forest cover types have recently been received for public distribution by the Pacific Northwest forest experiment station, according to T. T. Munger, director. The map is on a scale ¼ inch to the mile, and is the first of a series covering Oregon and Washington. This series is one of the results of the forest survey of Oregon and Washington, upon which a force of field and office technicians has been at work for several years.

The maps can be obtained at 423 U. S. Court House, Main and Sixth, Portland, for $1.00 per copy. An additional charge of 10c will be made for mailing from 1 to 5 copies. For more than 5 copies an additional charge of 20c will be made. Remittance should be by cash, certified check or money order payable to the Regional Fiscal Agent.

Through this publication detailed information on forest resources is for the first time available in map form for Oregon and Washington, according to the experiment station. In all, 27 forest types are shown in colors on the map. Location of old growth and second growth Douglas fir, spruce, hemlock, cedar, ponderosa pine, balsam fir, and hardwood types as well as cut-over and burned areas are shown.

The map of Northwestern Oregon includes all of the state north of Eugene and Bend and west of Prineville. Individual copies have been distributed to some public agencies, including offices of county assessors, county agents, county courts, forest supervisions, district fire wardens, and the state forester. Similar maps for southwestern Oregon will be available within a month or two according to experiment station officials and the other two quarters of the state will be ready at later dates. Type maps for the state of Washington will be published within a short time and notice will be given as these other maps are available.

IMPROVED FABRICATION OF 18-8 CHROMIUM STEELS

This booklet on the improved fabrication of 18-8 chromium steels, recently published by The Linde Air Products Company, 30 East 42nd Street, New York City, is an eight-page illustrated discussion of improvements in technique and materials. It is available free of charge upon request.

Outstanding properties of 18-8 chromium steels are reviewed to point out the need for improved fabrication. Susceptibility to intergranular corrosion in the base metal zones adjacent to the weld has been found to be eliminated by the presence of columbium or titanium in the steel and of columbium in the rod. This combination of materials permits the fabrication of welded stainless steel products which have full corrosion resistance in the as-welded condition. Photographs of etched specimens illustrate the results obtained. Columbium bearing welded rod also has been found to eliminate cross welded effects in "untreated" stainless steels.

The discussion moves logically to the actual welding procedure. Flame adjustment is an important factor. In welding 18-8 steels it is necessary to use a flux. Puddling the weld, heating and fluxing as well as other points of welding technique are clearly explained.

To make the booklet even more valuable to those interested in the welding of chromium steels, a section on simplifying fabrication problems is included. These improvements in the welding of 18-8 chromium steels have greatly facilitated the successful fabrication of products designed for operation at high temperatures or under extremely corrosive conditions.

NEW PROCESS FOR UTILIZATION OF WASTE SULPHITE LYES

A new means of utilizing waste sulphite lyes is reported to have been discovered by an engineer associated with the chemical enterprise "Chemical Factories Smolenice, Josef Palffy." It is reported that this process has been patented in Czechoslovakia and patents are pending in several other countries.

New uses of this by-product are:

(1) The impregnation of wood of all kinds, including soft and inferior woods.

(2) Production of plasters which adhere to wood, metal, concrete or brick, forming an air-tight and water-tight finish not affected by changes in temperature, chemicals, or fire.

(3) For production of artificial leather, if used together with waste of chrome and tannic leather.

(4) For artificial fertilizers. If used together with coal, the product is said to be superior to Chile saltpeter fertilizer.

Laboratories are reported to have already been built in Czechoslovakia at a cost of $40,000, where waste sulphite lyes will be prepared for the various uses described. The product has not yet appeared on the domestic market. The discoverer of the process is interested in granting the manufacturing rights to producers in various foreign countries. Any parties interested can get in touch with him at his Prague address. He is also prepared to go to the United States at his own expense to discuss the matter with any inquirer who gives evidence of serious interest. (Dominik Wallenfels, American Consulate General, Prague, Czechoslovakia.)

CZECHOSLOVAK PAPER CARTEL PROLONGED FOR SIX YEARS

Czechoslovak paper mills at the end of December, after prolonged negotiations, renewed their agreement covering production contingents, prices and sales for another period of six years, dating from January 1st, 1936. The basic structure of the cartel is reported to have remained unchanged, but a reallocation of production contingents has been arranged in order to allow for the inclusion of the most important paper manufacturers still outside of the cartel.

As a result of the general economic depression and the decline in paper sales, the actual production of the cartel members now amounts to only about 60 per cent of the original quotas assigned. —A. W. Guthrie, American Consulate General, Prague.

BELLECK ON COAST

R. F. Belleck, advertising manager of the Whiting-Plover Paper Co., of Stevens Point, Wis., recently called on Osborne C. Doane of the Doane Paper Co., San Francisco. Mr. Belleck was on the coast laying the groundwork for a coming advertising campaign on his firm's "Permanized Papers."

SWEDISH PULP COMPANY TO EXPAND OSTRAND KRAFT MILL

In the course of this year the Swedish Pulp Company will enlarge its sulphate mill at Ostrand to a capacity of about 130,000 tons per annum. The principal orders for the machinery required have already been placed, and the work will be started as soon as possible in order to be completed by the autumn.

When the mill was built in 1930, the plans allowed space in the buildings and elsewhere for a subsquent extension of the capacity by about half. The whole mill is at present divided into two sections, and space is reserved for the installation of equipment for a third section, which will now be installed. The number of digesters, for instance, will be increased from 12 to 16, the diffusers from 30 to 40, and a new evaporating plant and four soda furnace aggregates with all accessories will be put in as well as another fan drier in the drying department, while another chipper and chip screen will be added to the wood-cleaning department. The whole extension will cost about 4 million kr.

The original annual capacity of the Ostrand mill was about 75,000 tons. Certain new devices gradually increased the output to 100,000 tons, and this capacity will now be further increased to 130,000 tons of dry sulphate per annum.

According to a notice in the Sundsvalls-Posten, the new digesters will be supplied by A.-B. Hedemora Verkstader, the diffusers by Gefle Varv & Verkstader, and the fan drier by A.-B. Svenska Flaktfabriken. Karlstads Mekaniska Kerkstad will supply the new chipper and chip screen, as well as the rotary furnaces in the soda house. Certain machines for the soda, screening and packing departments have been ordered from Sundsvalls Forenade Verkstader, while other orders have been placed with the Sund, Skonvik, and Mohog workshops, all in the Sundsvall district.

ULLMAN ISSUES COLORLOG

The Sigmund Ullman Campany, a division of the General Printing Ink Corporation has just issued a "Colorlog," a new type of color guide for advertising men and printers.

The Colorlog, 12 by 18 inches in size, contains a perfect spectrum of twenty-six balanced inks arranged in a circle, which completely charts the world of pure hue. Supplementing this circle of balanced inks is a showing of balanced tints in accurate harmony and useful where refinement of tone is desired.

Another chart shows a specially equalized line of inks of medium color tone quality and scientifically fixed to harmonize with black type and white stock. This is an effort to solve one of the most constant of all problems in the graphic arts. Additional charts are devoted to Sigmund Ullman Multi Process Inks, and to red, blue, green, and brown toners that have been traditional in the industry for many years.

The Colorlog exhibits over one hundred ink specimens. Color has been geared to those hues most appealing to the eye. Most of the samples are special formulae developed in the Sigmund Ullman laboratory and designed primarily to meet the demands of modern advertising.

Copies are available only to printers and advertisers and may be had by writing the Sigmund Ullman Company, Park Avenue at 146th St., New York City, or a 501 Plymouth Court, Chicago.

DIAGONAL GRAIN OF PAPER IMPORTANT IN ENVELOPES

The advantage of having diagonal grain in envelopes intended for heavy duty is illustrated by some tests recently made at the National Bureau of Standards. Paper generally has a decided grain, that is, more fibres lying in the "machine" direction or the direction in which the paper runs on the paper machine, than in the opposite or "cross" direction. It is therefore generally more resistant to being torn or pulled apart in the former direction.

Two lots of Kraft envelopes were tested, one of which had the grain of the paper at an angle of 45 degrees with the folds of the envelopes, while the grain in the other envelopes was parallel to the side folds. In both cases the tensile strength of the paper in the grain direction was about double that in the opposite direction. When the folds of the envelopes, where any failure generally occurs, were tested, the advantage of the diagonal cut of the paper became apparent. The folds of these envelopes all had practically the same tensile strength, which approximated an average of the strength in the two different directions of the paper, while in the other envelopes, the folds of course reflected the uneven strength of the paper, that is, the tensile strength of the end folds was relatively low, being about one-half that of the diagonal grain envelopes. Furthermore, a comparison of the strength of the unfolded and the folded papers, showed that the diagonal-grained paper had lost less strength in being folded in the envelope machine.

Simplified Practice, Its Purpose and Application

The Division of Simplified Practice of the National Bureau of Standards serves as a clearing house or centralizing agency through which manufacturer, distributor, and consumer groups cooperate in furthering a nation-wide program for the elimination of the excessive and needless variety of sizes, types, and dimensions of manufactured products, which make the processes of manufacturing, and distribution less profitable than might be. Statistics issued from time to time estimate the costs of avoidable wastes in production and distribution, and while there may be differences of opinion as to the magnitude of these costs, there is a consensus as to the fact that there is always room for improvement.

Simplified practice offers itself as one means of reducing the costs of production and distribution. Successful application of simplified practice is dependent upon voluntary support by manufacturers, wholesalers, retailers, and consumers. In addition to industry itself, direct cooperators in, and beneficiaries of this activity are Federal, State, and municipal establishments. Each Simplified Practice Recommendation, based as it is on the voluntary initiative of the affected business groups, exemplifies self-government in industry.

In the Bureau Letter Circular 456 will be found a more detailed consideration of the principle of simplified practice, and a description of the plan that any group in any industry may follow in inaugurating the development of a Simplified Practice Recommendation. Copies can be obtained without charge on application to the Bureau.

FIND LOG 650 FEET BELOW SHELTON

The third deep well drilled for the Rainier Pulp and Paper Company of Shelton, Washington, to a depth of 700 feet has shown ability to produce approximately four million gallons of water per day under a temporary pumping setup.

During the drilling a well preserved log was encountered at 650 feet. Several pieces were brought up by the drill. The gravel strata indicated the log was in what once was a stream bed.

In the drilling of the other wells logs were encountered but none as far down as the one found in the third well.

The second well is now producing five million gallons of pure water per day.

A fourth well will shortly be drilled to provide an additional water supply.

NEW TYPE OF EGG CARTON INTRODUCED IN SWEDEN

A new type of egg carton has recently appeared on the Swedish market. It is said to possess distinct advantages over those now in use. The carton, which is made of thick corrugated paper, is delivered flat in rectangular sheets measuring 11 inches by 24 inches for a ten-egg container. When folded and set up in accordance with the creases pressed into the sheets, long, open-ended boxes are formed with one vertical and two sloping, lengthwise partitions. Each sloping partition is perforated with a row of "X-shaped" slits, into each of which an egg is inserted. Each egg thus rests in suspension, firmly held and protected on all sides by corrugated paper. An interesting feature of the newest container is the method of sealing by the use of patent Swedish adhesive. Two surfaces coated with this adhesive will cling together with great strength when merely pressed together without the use of moisture and yet the adhesive area is not sticky to the touch nor will it adhere to other objects.

THE FRENCH CIGARETTE PAPER INDUSTRY

Popular brands of American cigarettes are made with cigarette paper manufactured almost exclusively in France. This is a striking example of a permanent change in commerce occasioned by the war. Before 1914 the United States obtained its supply of this product from Austria, but when this source was cut off the cigarette makers found another source of supply in France, where the industry had been established for about 100 years. From the modest figures of $690 in 1915 and $75,000 in 1916, French exports to the United States rose to between four and five million dollars in 1919, at which level the trade has remained ever since. The establishment of a factory in France by a large tobacco company of the United States would seem to assure permanence to this trade.

Although some twenty-two firms in France manufacture cigarette paper, 95 percent of the exports to the United States are made by four leading firms, which are estimated to account for about 40 percent of the French production. Three of these firms are located in the Nantes Consular District with factories in Finistere and Aube. A fourth factory is located in the Bordeaux district. About five percent of the exports are sold from the Paris area. Accurate statistics covering production of cigarette paper in France are not available, but the total is estimated at 18,000 metric tons (metric ton equals 2,205 pounds) valued at $11,000,000. The domestic market consumes about 20 percent, the United States takes about 40 percent, and some other twenty countries he remaining 40 percent. Imports into France are negligible.

The materials from which cigarette paper is made are linen rags, old rope, and hemp (chanvres) of various kinds, but not including Manila. These are obtained chiefly from local sources, with supplementary shipments from Poland, Italy, Great Britain and several countries of Eastern Europe. Recently new sources were sought as a result of supplies from Italy being cut off.

Production of cigarette paper has been maintained at a fairly steady volume, depending on world consumption of cigarettes. It declined to about 70 percent of normal in 1932 and 1933, when the economic depression in the United States was most keenly felt in this industry, but has since revived to a level considered fairly satisfactory. Producers state that there is no profit at present prices and with the 60 percent American duty to surmount. An outstanding trend in the American trade has been a steady decline in exports of booklets for several years, owing to their manufacture in the United States from imported rolls and sheets. There have been no exports of booklets from the Nantes district in the last two years. From the Bordeaux district it is reported that exports of booklets were valued at $215,737 in 1935, or less than half the figure for 1934. (Consul B. M. Hulley, Nantes.)

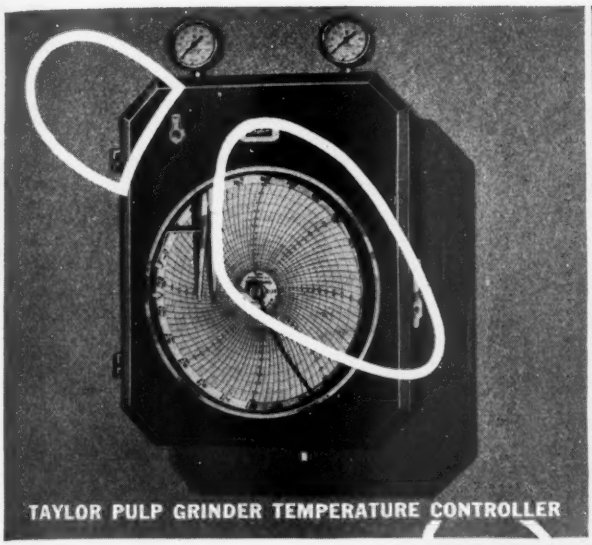
BRITISH INCREASE PRODUCTION OF TRANSPARENT CELLULOSE WRAPPINGS

The output of transparent cellulose wrapping in the United Kingdom during the first 9 months of 1935 is estimated to have reached a total of 43,230 hundredweight (British hundredweight of 112 pounds) as compared with only 54,850 during the entire year 1934, and 25,200 in the preceding year. Production of transparent cellulose wrappings in the United Kingdom now far outstrips imports, which amounted to only 8,970 hundredweight during the first 9 months of 1935. Export trade, in the meantime, increased from 1,695 hundredweight in 1933 to 4,520 in 1934, and 6,990 hundredweight during the first 9 months of last year. A large new mill for manufacturing this article is now under construction at Bridgewater, Somerset, and will be ready for operations late in 1936. Courtalds, Ltd., manufacturers of rayon, are reported to have a substantial interest in the company erecting this mill. (Alfred Nutting, American Consulate General, London)

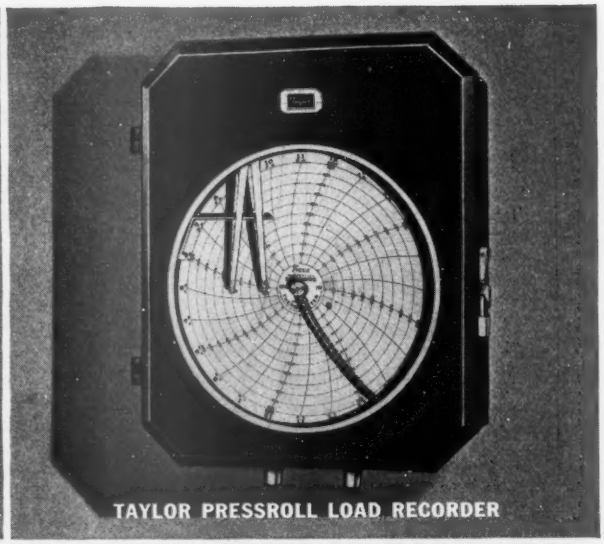
DECREASE IN FRENCH IMPORTS OF WOODPULP AND PAPER DURING 1935

Imports of wood pulp into France decreased by 5.6 percent during 1935 as compared with the preceding year, while imports of newsprint, kraft and fine papers show a drop of 10.7 percent. Aggregate imports of wood pulp dropped from 514,729 metric tons in 1934 to 485,924 metric tons in 1935. This decline was largely owing to heavy decreases in imports of mechanical pulp and unbleached sulphite. Imports of newsprint, which makes up the largest single item in France's import paper trade, dropped from 72,435 metric tons in 1934 to 65,239 metric tons last year. (Consul B. M. Hulley, Nantes.)

Take these big steps...



TAYLOR PULP GRINDER TEMPERATURE CONTROLLER



TAYLOR PRESSROLL LOAD RECORDER

TAYLOR SULPHITE DIGESTER CONTROL

THE RESULT: ***Maximum output of uniformly high quality stock at lower cost per ton. Let us give you complete data on these 3 Taylor contributions to efficient, economical production.***

IT'S NEWS when a manufacturer of paper mill equipment announces one major development.

But it's BIG NEWS when the same manufacturer can offer in quick succession two more outstanding developments to eliminate time-worn and costly methods.

Taylor makes possible these three long steps in mill modernization which speed up production, produce amazing economies, and help to increase profits. In Canadian and American plants, results prove the statement.

What are the highlights for you of these three Taylor contributions to paper-making? The precise, automatic control of Pulp Grinder temperatures assures a stock of the uniform texture, freeness and strength desired. Its close regulation of temperature is felt all the way to the driers in more efficient and more rapid production, longer stone life and greater operating economies all along the line.

The Taylor Pressroll Recorder helps to maintain uniform and correct pressures at the roll. It reduces drying costs, the use of steam, and uneven wear on felt. It produces a uniformly dried sheet with the exact characteristics desired in the finish, bulk, density and opacity for each grade of stock.

The Taylor Sulphite Digester Control System makes it certain that the ideal cooking cycle for a particular grade of stock will be followed automatically every time. It controls and coordinates exactly the costly variables of temperature and pressure.

Let us show you how you can use one or all of these three Taylor developments in your mill—and save money.

Taylor Instrument Companies, Rochester, N.Y., or Toronto, Canada. Manufacturers in Great Britain—Short & Mason, Ltd., London, England. Pacific Coast Sales Offices—Aronson Bldg., San Francisco, Cal., and Central Bldg., Los Angeles. Also, Terminal Sales Bldg., Portland, Oregon.

Taylor

Indicating Recording • Controlling

TEMPERATURE, PRESSURE *and* FLOW INSTRUMENTS

R. T. VANDERBILT ENLARGE RESEARCH LABORATORY

The R. T. Vanderbilt Company, Inc., with offices at 230 Park Avenue, New York City, is now building a large addition to their present laboratories at Norwalk, Connecticut. Construction work will continue during the spring months and it is expected that the new building will be completed and all equipment installed by June first this year.

R. T. Vanderbilt are known to the paper industry for their China clays and "Rayox", pure titanium dioxide, used to obtain maximum opacity.

The new laboratory, designed by Mr. H. T. Lindberg of New York City, will be a three story red brick building with ten thousand square feet of laboratory space. The style is true Colonial similar in character to the present laboratory completed in 1929, which is shown at the left of the drawing. The two buildings will be connected and together will form a most complete, modern and efficient plant.

The steadily growing demand for Vanderbilt products and the continual addition of items have made this new laboratory essential. It will provide better working conditions and ample space for developing new products as well as for expanding the uses of products now handled.

The general chemical laboratories, the ceramics and rubber laboratories will remain in the old building, expanding to take over the space vacated by the paper, paint and textile laboratories which will be moved to the new addition.

In the new building, the third floor will be entirely devoted to paint work with provision for exterior weathering tests on the roof. The equipment will include all the usual facilities for the grinding and mixing of paint, a separate room for experimental work on varnish manufacture, and complete facilities for testing. A constant temperature or humidity room for drying and for film tests will be an added feature.

The second story will be given over to investigations on paper and the latest developments in apparatus for physical testing will be installed. There will be a constant temperature and humidity room on this floor also. Experimental coating work will be done on a newly developed machine fully equipped with drier and a super-calendar. The new type of British hand sheet mold, recently adopted by TAPPI will be added. There will be large mixing tanks installed for the preparation of coatings on a semi-commercial scale.

The textile laboratory will be on the ground floor. Back of this will be storage and filing space. There will be a separate fire-proof building for the storage of inflammables, a new machine shop and a new power plant. The apparatus for temperature and humidity control and also air compressors will also be on the ground floor.

Upon completion the new Vanderbilt laboratory will be open for inspection and the Vanderbilt Company will be prepared to render even better and more complete services to all members of the paper industry.

J. SCHEUERMAN AGAIN GREETS WESTERN FRIENDS

About the middle of April, Mr. Joseph Scheuerman, sales engineer for the Cameron Machine Company of Brooklyn, New York, arrived on the West Coast in connection with some important projects involving the sale of Camachine winders, both in the United States and British Columbia.

He is renewing his contacts with old friends here and is telling of the extraordinary activities of the plant in Brooklyn which seems to have been favored with an unusual number of orders for winders and rewinders in the past six months.

To Mr. Scheuerman and his associates, the situation is not surprising. All during the depression the men in the mills were on the alert and studying modern equipment. So long as production was at a low level they limped along with antiquated equipment. Now with production stepping up and money circulating a little faster, they find that the old equipment will not stand the strain. They know what they want; they know who builds it; so they go and get it.

GENERAL ELECTRIC'S PENSION SYSTEM

Pension payments to retired employes of the General Electric Company for 1935 totaled $2,589,053, according to the annual report of the company's pension board. The total number of individuals receiving pensions December 31, 1935, was 3290, one less than for 1934.

The average pension age for the year was 67.6, and the average continuous service was 29.5 years. The average amount of the annual pension was $771.

Since the establishment of the pension plan in 1912 a total of $15,630,719 has been disbursed to retired employes.

MR. F. J. HARWOOD HONORED

On the evening of February 15th Mr. F. J. Harwood, president and general manager of the Appleton Woolen Mills of Appleton, Wisconsin, was honored at a dinner given by the company's employees, to celebrate the fifty-fifth year of Mr. Harwood's service to the company as its general manager.

Aproximately one hundred and fifty employees attended the dinner. Mr. A. H. Thurer acted as toastmaster and Mr. A. H. Wickesberg presented a bronze placque and a leather bound, hand engrossed, illuminated letter resolution, to Mr. Harwood.

The inscription on the placque reads as follows: "Presented to F. J. Harwood on the attainment of his fifty-fifth aniversary as manager of the Appleton Woolen Mills—His strong leadership in church, industry, and civic affairs; his application of Christian principles in his own plant; his gift of personal service to the interests of boys and young men, have won for him affection, high honor and esteem." The testimonial was signed by the officers and employees.

Mr. Charles Server of Portland is the Pacific Coast representative of the Appleton Woolen Mills.

LINK-BELT ISSUES COMPLETE BEARING CATALOGUE

A new catalog, No. 1520, 40 pages, 6-in. x 9-in. page size, illustrated, has been published by Link-Belt Company, Chicago, Philadelphia, San Francisco, on Link-Belt anti-friction bearing units available in streamlined pillow block, hanger, takeup, flanged, duplex and special mountings.

Five distinct types of bearing units are covered, known as Series 100, Series 400, Series 500, Series 600 and Series 900. Series 100, 500, 600 are entirely new, not having been announced previously. Series 100 is a self-aligning ball-bearing unit; the others are of roller bearing type.

The book is said to be the first covering the complete Link-Belt anti-friction bearing line. A copy will be sent any reader upon request, which may be addressed to the company's nearest office.

USEFUL NICKEL ALLOY CHARTS

The nickel sales department of the International Nickel Company, 67 Wall Street, New York City, has recently brought out two charts useful to the pulp and paper mill operators. One is a guide to the proper selection of nickel alloy steels and the other a guide to the selection of nickel cast irons.

Either or both of these charts are available to engineers without charge upon written request to the International Nickel Company.

B. C. PULP'S NEW TELEPHONE SERVICE

Executives of B. C. Pulp & Paper Company at head office in Vancouver may now communicate by telephone with their staff at the Woodfibre mill.

British Columbia Telephone Company has installed a long-distance cable and wire from Vancouver to Woodfibre on Vancouver Island, and the pulp town can now be connected with any telephone in the world network. The new service is provided by the telephone company's existing lines along Howe Sound to Britannia Beach, where connection is made with a Canadian government circuit to Woodfibre.

Many Mills Enjoy Large Power Savings Increased Production... Improved Quality with HYDRAULIC BEATING SYSTEMS

(Patents issued U. S. No. 1384987, No. 1422251 and others, Pending Canada and Foreign Countries)

Target (beater) installation in large Eastern mill.

The successful use, in various mills, of the HYDRAULIC BEATING SYSTEMS is proved by the satisfactory results obtained, for example:

Power saving in one mill is 31%; in another mill 33% and in a third mill 38%.

These are actual performance records. Other mills are making similar savings in power and all these mills are getting:

Speedier and more improved pre-treatment of pulp.

Extremely economical handling of pulp, broke and waste paper in relation to low power per ton and men required.

Machine speeds have been increased from 10 to 80 feet per minute.

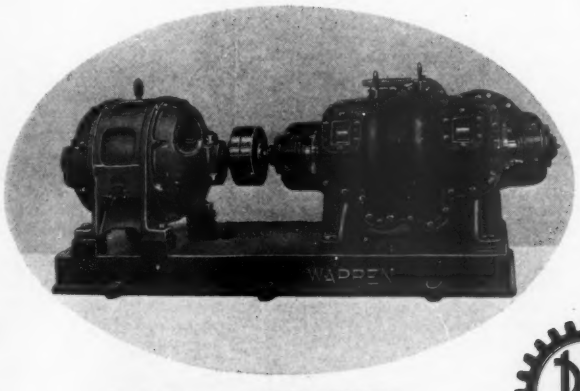
Improved finish and better quality of product.

The following abstract from letter to us shows the definite advantages enjoyed by a large Western board mill in reduced power cost and improvement in quality:

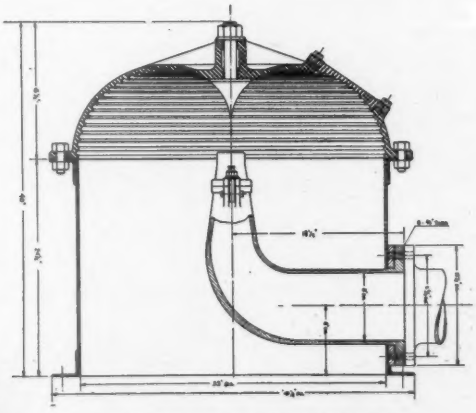
"Your Bale Pulper and Hydraulic Beating System has permitted us to shut down beaters, pumps and one Jordan, making a total saving of a little over 300 H. P. with approximately 10% better stock from a slightly cheaper formula."

You too can have these important operating and economy advantages in your mill.

Full particulars gladly mailed on request.



High Pressure FIBROPUMP— used with Target.



Sectional view of "Umbrella" Target. U. S. Patent No. 2,000,268.

PAPER AND INDUSTRIAL APPLIANCES, INC.
122 EAST FORTY-SECOND STREET, NEW YORK CITY

Pacific Coast Representative: A. H. LUNDBERG, 3311 First Ave. So., Seattle, Wash. *Canadian Representative:* J. S. BABBITT, University Tower Building, Montreal, Quebec, Canada. *London:* Paper and Industrial Appliances, Ltd.

GERMAN PAPER YARN INDUSTRY*

By W. S. JESIEN, American Consulate-General,
Frankfort-on-Main, Germany

Paper yarn played an important part in the German raw material economy during the world war. Paper yarns and fabrics were then the most successful substitutes for natural textiles, despite most earnest efforts to cultivate and utilize several kinds of fiber plants adaptable to German climatic conditions. Rayon had not then attained the technical perfection or the present high quality that makes it the most hopeful substitute for a similar future emergency. Incidentally, Germany's absolute and relative importance in the world's rayon industry was not as great in those days as it has become of late.

Besides being the most abundant raw material available, paper was also the cheapest and the easiest to spin. There are no statistics available on the German production of paper yarn. It appears, however, that the following quantities of "other materials" which are surmised to be entirely, or for the most part, paper were used in the manufacture of binding twine and rope:

Year	Metric Tons
1925	2,577
1926	2,261
1927	2,584
1928	1,950

The above figures represent the textile materials consumed other than cotton, wool, flax, silk, rayon, jute, hemp, tow, manilla, sisal, New Zealand hemp, etc., which is a fairly complete enumeration of all possible raw materials except paper. It must therefore be concluded that about 2,000 to 2,500 tons of paper binding twine, strings and cords are produced in Germany.

There are no similar data regarding the use of paper yarn for woven, braided and basketwork wares. However, this production must be considerable to judge by the present popularity of paper hats, cheap mats, hangings, etc.

Methods of Manufacture

There are several kinds of paper yarn on the market but the methods of manufacture are essentially only two: twisting an endless strip of paper, and shaping the yarn direct from the pulp. The latter system is used in the manufacture of "Zellulongarn," a product that is receiving a great deal of publicity lately.

Not all paper yarn of the twisted strip type now produced in Germany are just twisted strips since various methods have been developed for imparting to the material greater softness and pliability by creasing, creping or perforating the strip without tearing it apart. One kind is not twisted at all but pleated lengthwise and pressed together producing a thick and coarse band which is used to some extent for warp in coarse fabrics or for cores in certain kinds of yarn made by winding finer material around a cheap core. This pleated strip is called "Papierflachgarn." Round paper yarn is known as "Xylolin" or "Lizellagarn."

"Zellulongarn" is made on a paper machine direct from the pulp. The paper machine used for this purpose retains only the "wet end" of an ordinary papermaking machine. The "dry end" with its rollers and calenders adapted to production of flat web of paper, is replaced by machinery which is essentially textile. As the wet web leaves the wire it is separated into narrow strips which are then squeezed into cylindrical shape and dried to the point where they can stand the strain of spinning. The pulp for "Zellulongarn" is unsized and therefore the product is distinguished by softness and elasticity. Bleaching and dyeing is carried out in the beater. There is a certain "optional twist" which produces the strongest yarn Twisting the yarn too tightly weakens it, whereas too loose a texture causes it to tear easily. Despite the complete absence of size, "Zellulongarn" is very strong. It may be saturated with paraffin or some other suitable material which is said to facilitate further handling. It may also be polished by running it through a polishing funnel.

The exact processes by which "Zellulongarn" is shaped and processed in spinning and finishing operations have not been revealed. There are reasons to believe, however, that these processes are insufficiently protected or not protected at all.

Trend Upgrade

The trend of the paper yarn manufacture is on the upgrade at present owing to the tendency on the part of the German business planning administration to replace, as far as possible, imported raw materials with those produced from domestic sources. While paper yarn can hardly be relied upon to replace coton, wool, or silk, it may offer a passable substitute for a large part of the hemp, jute, sisal and similar textile fibers of which Germany imported in 1934 an amount worth 46,036,000 marks in addition to about 10,000,000 marks spent for the same materials in spun or partly manufactured or improved shape.

During the first half of 1935 these imports attained a remarkable further expansion, rising to a total of 121,477 tons valued at 32,614,000 marks against 104,757 tons valued at 26,802,000 marks for the first half of 1934.

A part of these imports have doubtless served to save wool and cotton in various replaceable uses it being argued that as long as complete textile independence is unattainable the next best thing is to reduce the unfavorable balance of trade by using less expensive materials in place of more expensive. This trend is in harmony with the general economic condition of Germany characterized by the greatly declined average income of labor.

Uses

There are many uses in which paper yarn holds its legitimate position and is not regarded as substitute but as the "right yarn in the right place." Thus, in the province of hangings, tapestry, braided ornaments, it has been used for many years in all civilized countries.

Use In the Manufacture of Hats

Ladies hats offer an attractive field for paper yarns. These short-lived dainty articles do not require tough durable materials but ones capable of assuming a great variety of colors, finishes and special effects. The stiffness and coarseness of paper yarn, objectionable in textile uses is an advantage in imitating straw weaves, and the susceptibility to moisture is overcome readily by impregnation with any of the numerous waterproofing compositions which may be carried out either in the yarn or on the finished shape.

There are a great many varieties of hat yarns and pleats on the market in Germany most of which incorporate paper yarn in various modifications. There are woven fabrics of round and flat paper yarns in taffeta, rep, twill and panama weave. Plain weaves in ordinary paper yarn and Zellulongarn are offered in coarse and fined fabrics.

There are single and doubled paper yarns. One variety specially intended for hat making has a thin wire inserted for additional stiffness.

Combinations of paper and other materials produce new effects. The product, known as "Textilingarn," represents cotton, linen, jute or hemp core with paper strip wound around it.

"Textilosegarn" is paper yarn around which cotton or linen yarn has been wound.

"Pedaline," a very popular article, is paper yarn surrounded by cellophane winding.

The greatest ambition of the German hat industry has been to duplicate the Japanese panama hat imitations, a masterpiece of "Ersatz" technique which have been dumped on European markets at ridiculously low prices. The high quality and excellent appearance of these "paper panamas" have made quite an impression upon German manufacturers who are feeling that their reserved domain has been trespassed by the Japanese in this case. The Japanese article is woven exactly after the well known Panama hat weave but consists of paper yarn impregnated in a solution of celluloid. Up to the present the Germans have not mastered the technique of the Japanese paper panama weavers and the first samples of German panamas are greatly inferior in appearance of the "straw" and in the weave.

Uses in the Manufacture of Rugs

There are many varieties of rugs and mats incorporating paper yarn either in the backing of rugs (usually the weft only) or in imitations of straw and fiber weaves. Coarser and twisted yarns, colored for the most part, are used in the manufacture of these articles which enjoy great popularity in the low-price field.

Binding Twine

The paper intended for the manufacture of binding twine is heavily sized in the beater and is made from high quality chemical pulp. Sulphate pulp produces the strongest yarns. Considerable amounts of paper twine are sold in Germany without the purchaser knowing their composition or detecting it from the appearance or strength of the twine. Heavier strings and cords are also made and used extensively for packing purposes.

Other Uses

While the ordinary round paper yarn seems to have come to a standstill in development of new uses, "Zellulongarn" is forging ahead invading one province after another previously reserved to natural textile materials. Among such uses are mentioned elastic bands, especially in suspenders, beach shoe fabrics, beach hats, etc. Woven wall paper of "Zellulongarn" is crowding out steadily the fabrics used for similar purposes.

The invasion of paper yarns has not ended yet and they may be counted upon to play even greater part in the national textile industry of Germany if the present autarchic trend coninues.

*Released through the Forest Products Division, Bureau of Foreign & Domestic Commerce, U. S. Department of Commerce.

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of those who sell paper in the western states

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THE DEL MONTE MEETING

A presidentless convention will be that of the Pacific States Paper Trade Association at Del Monte May 14, 15 and 16, because Charles H. Fricke, Tavemer & Fricke, Los Angeles, who now occupies the executive chair, will be on a European trip at the time of the meeting. President Fricke reported he couldn't posibly arrange to be at Del Monte, because he is going abroad with friends and this is the one chance in a lifetime for such a trip.

Neither will there be an executive vice-president on the job to handle the gavel, for G. O. Rogers, Spokane Paper & Stationery Co., Los Angeles, who has that title, is busy building a new home and reports he just cannot get away to make the trip to California.

So now the powers that be have picked out W. W. Huelat, Blake, Moffitt & Towne, Los Angeles, to preside, but up to the first of April Mr. Huelat's acceptance had not been received at the association's offices in San Francisco by H. Arthur Dunn, secretary-treasurer. Mr. Huelat is one of the five vice-presidents, the others being E. R. McQuaid, Pacific Coast Paper Co., San Francisco; A. P. Spitko, Carpenter Paper Co., Salt Lake; Vernon C. Scott, Packer-Scott Co., Portland and E. E. Embree, Carter-Rice & Co. Corp., Seattle.

Reservations were coming in from members and millmen guests in good shape on the first of April and it was expected there would be a good attendance. Up to that time there had been reservations from three easterners—William C. Bryan, Collins Manufacturing Co., North Wilbraham, Mass.; D. S. Leslie, Hammermill Paper Co., Erie, Pa., and Mr. and Mrs. S. L. Willson, American Writing Paper Co., Holyoke, Mass., of which Mr. Willson is president.

L. A. MERCHANTS GOING TO DEL MONTE

Merchants of paper in Southern California are working on plans to see that there is an unusually large representation from their section at the May meeting of the Pacific States Paper Trade Association at Del Monte. As part of the program to stimulate interest in the convention, a four-page bulletin was recently sent to all those eligible, from the office of W. B. Reynolds, paper conference secretary.

CROY OF MENASHA ON COAST

Leo E. Croy, general sales manager of Menasha Products Co., Menasha, Wis., was in Los Angeles for a few days toward the end of March, visiting Roy Gute of the Southern California office, before going on north up the coast.

S. P. Sitter is now assistant to Mr. Gute in Los Angeles, having recently come out from the home office at Menasha.

HAROLD ZELLERBACH RETURNS

Harold Zelerbach, President of the Zellerbach Paper Company, returned to his office the last week in March after an extensive business and pleasure trip throughout the East, Havana and Mexico.

In discussing the annual meeting of the National Paper Trade Association, Mr. Zellerbach emphasized the fact that now, more than ever, the organization must be measured not only as an offensive vehicle for handling merchants' problems, but as a defensive vehicle for protecting merchants' interests.

This defensive activity includes such projects as protecting paper merchants interests against bad legislation—exemplified by the laws which are constantly being introduced into Congress restricting the merchants' efforts and burdening him with further expense for the ever-increasing reports to government agencies, etc.

The National Paper Trade Association is also doing a splendid job in protecting merchants' interests against direct selling by mills and the tearing down of trade practices and trade customs.

Through Mr. Hewins, the new field secretary of the Association, new locals are constantly being organized, bringing to the members of the trade who heretofore have not joined in N. P. T. A. work, the necessity for active participation. This increased membership will assure a more solid front when the commodity committees are working with the various mill factors.

GENERAL ACQUIRES INTERNATIONAL OFFSET LINE

The General Paper Co.'s Los Angeles branch is now handling the International Paper Co.'s line of offset book papers, acording to Lew Gronich, manager.

Observing the heavy auto traffic past the store, Mr. Gronich has recently instituted an innovation along paper row by building cabinets in the offices at each end of the building, so that the windows may be used for display purposes. The first windows held displays of school supplies and of ropes.

Later a miniature paper mill will be displayed, furnished by Fibreboard Products, Inc.

Since moving into the new building at 220 So. Los Angeles street, the company has purchased two new 1½-ton trucks to augment the delivery department equipment.

BEN LEVISON SHOWING NEW SAMPLE BOOK

Ben Levison, San Francisco mill representative, is proudly displaying a new spiral-bound sample book just issued by one of his principals—The J. P. Lewis Co. of Beaver Falls, N. Y. This displays the Lewis line of tag boards, blanks and Belmont bristol, which, says Ben, is commonly called bogus bristol.

L. A. MILLMEN MEET

Los Angeles paper mill men gathered March 26 for the club's semi-monthly evening social affair, and held forth at Paris Inn, continental restaurant.

In addition to the entertainment provided by the management, color was added to the affair by paper hat banquet favors which converted the paper men into Napoleons, artists, grenadiers or other fantastic figures, and by a special singing attraction aranged by Charley Spies.

Ralph Reid and Jerry Madigan were in charge of planning the meeting, and did a creditable job on short notice.

Election of new officers will take place at the noon meeting April 23. The slate is being written by Russell F. Attridge, chairman, Warren Dunnell, Charles Spies, S. G. Wilson and A. A. Ernst. The meeting wil probably be at the Terminal Club.

Guests at the March dinner included Edward T. Compte, box manufacturer, Andy Cochran of Dill & Collins, San Francisco, and C. P. Sheldon, San Francisco, representative of the Northwest Paper Mills, Cliquot, Minn.

DWYER SUCCEEDS TAYLOR

Edward Dwyer of the San Francisco office of the Pacific Coast Paper Co. has succeeded Penfield Taylor as the firm's representative in the north California coast county area, working out of Santa Rosa.

"Pen" Taylor left a few months ago for Honolulu to join his brothers, Stanley and James, at Honolulu in the Honolulu Paper Co., owned by Stanley Taylor.

Mr. Taylor was one of the old-timers in the paper trade of northern California, having worked for the Pacific Coast company for more than twenty-five years. His father, the late James L. Taylor, and his grandfather the late S. P. Taylor, built the first paper mill in California, located at Taylorville, near Lagunitas in Marin county. This was said to have been the first paper mill built west of the Alleghany Mountains and operated until it was destroyed by fire in 1901. It manufacured wrapping and newsprint.

INGRAM TAKES ON BERGSTROM LINE

Ingram & Co., Los Angeles paper jobbers, now handle the Bergstrom line of book papers. The product is manufactured at Neenah, Wis.

ELKUS ACQUIRES BERCO

Elkus Paper Co., San Francisco, report they have acquired the Berco Chemical Co., of the same city, who specializes in sanitary and janitorial supplies. Sam Conn, who formerly managed Berco, is continuing with Elkus.

HARRY BEAN'S NEWS

"News you want?" parried Harry Bean, San Francisco, manager of the General Paper Co.

"Well, let's see! Put in a new furnace last week here and am going to paint the front of the building next week and there was a big fire down the street yesterday. But that's not news. I hired a new salesman last week, but that's not news, either, 'cause we might fire half a dozen next week.' No news today."

WUENSCHEL BACK FROM EAST

J. F. Wuenschel returned to his home in Hoquiam early in April from a two weks' visit to Erie, Pa., attending a sales manager's meeting of the Hammermill Paper Co. Mr. Wuenschel is Pacific Coast sales manager for Hammermill and the Grays Harbor Corporation.

ENGLE VISITS LOS ANGELES

Allen Engle, president of the Pacific Waxed Paper Co., Seattle, arrived in Los Angeles Mar. 29 with Mrs. Engle, to stay two weeks. In addition to attending to business affairs, he expected to take in a bit of desert air while here, a welcome change after a long winter in the Northwest.

HECHT TALKS ON CELLOPHANE

Victor Hecht, vice-president of Zellerbach Paper Co., San Francisco, in charge of sales promotion, spoke recently before the Oakland Ad Club on the subject of Cellophane. He was accompanied to the meeting by William Pickering, San Francisco, Pacific Coast representative of the Dupont Cellophane Co.

Accuracy

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PAPER PIE PLATES TO DISPLACE TIN

No more will the baker have to change his pies from the tin plate in which they were baked to the paper plate in which they are sold, if the Simmons Paper Products, Inc., of Warsow, Indiana, has anything to say about it.

The Simmons company announces that production will begin May 1st on a processed paper pie plate to replace the tin plate now used by bakers. The method of processing results in a plate that is odorless, greaseless, and tasteless, and meets all the requirements of the Pure Food Laws. Another point the Simmons company empasizes is that the pies are not touched by human hands after they leave the oven.

In the baking operation the paper plate increases its rigidity making it strong and durable for delivery service.

Machinery for making these new type plates is now being installed in a new plant in Warsaw, Indiana, and deliveries will begin sometime in May.

INTERNATIONAL OFFICIAL VISIT

P. J. Sulivan, assistant treasurer of the International Paper & Towel Co., was in Los Angeles the middle of March for a few days, conferring with the company's coast manager, Frank Gladden. Mr. Gladden flew down from Tacoma, where he had stopped on his Northwest tour, in order to meet his eastern visitor.

HEULAT BEATS THE SNOW

Walter W. Heulat, manager of the southern division for Blake, Moffitt & Towne, got back to his desk at Los Angeles the first of April, after a two weeks' trip to Phoenix, Tucson, San Diego, etc.

Enroute, acompanied by Mrs. Heulat, he took in the Grand Canyon. Incidentally, he nearly was snowed in at the Canyon, and might have spent some little time there if it had not been for the snow plows.

On the return trip he finished up at the San Diego division, where Blake, Moffitt & Towne have had new executive personnel since the first of the year. Roger Colson is now San Diego manager and in charge of wrapping paper sales, while Harold Whisnand is in charge of printing paper sales.

EVERETT MEN VISIT SOUTHERN CALIFORNIA

Two Northwest mill men honored Southern California with their presence the latter part of March, when W. J. Pilz and J. L. Murray of the Everett Pulp & Paper Co. came down and spent a few days with A. A. Ernst, Los Angeles manager. Mr. Murray, who now headquarters in San Francisco, went on north to Seattle and Everett with Mr. Pilz after leaving Los Angeles.

BM&T MANAGER MAKES GOOD AS SINGER

A western singer who is "going to town" with his voice is O. H. Barnhill, resident manager for Blake, Moffitt & Towne at Tucson, Arizona. Mr. Barnhill once was with the University of Washington Glee Club and tenor soloist with the First Methodist Church at Seattle. Later he was two years with the San Jose Opera Co., then on the radio and now is tenor soloist with the First Congregational Church of Tucson. He has studied with Harry Truax of San Francisco and Ralph Glenn of Seattle.

C. A. ESTY, PRESIDENT CARTER, RICE & CO., MAKES ANNUAL COAST TRIP

Mr. C. A. Esty, president of Carter, Rice & Company Corporation, whose headquarters are in Boston, made his annual trip to the Pacific Coast branches of the company early in April. Mr. Esty, accompanied by Mrs. Esty, came by boat through the Panama Canal, stopping first at Los Angeles, before going on to San Francisco to visit with Mr. Charles H. Beckwith, Carter, Rice Pacific Coast manager.

Mr. Beckwith accompanied Mr. Esty to Portland and Seattle, where they conferred with Mr. E. E. Embree, Seattle manager, before Mr. Esty left by train for the East, after a two weeks visit.

Mr. Esty was favorably impressed with the new location of Carter, Rice's San Francisco office and warehouse and with the progress made by his firm's branches in the West.

SPARROW IN LOS ANGELES

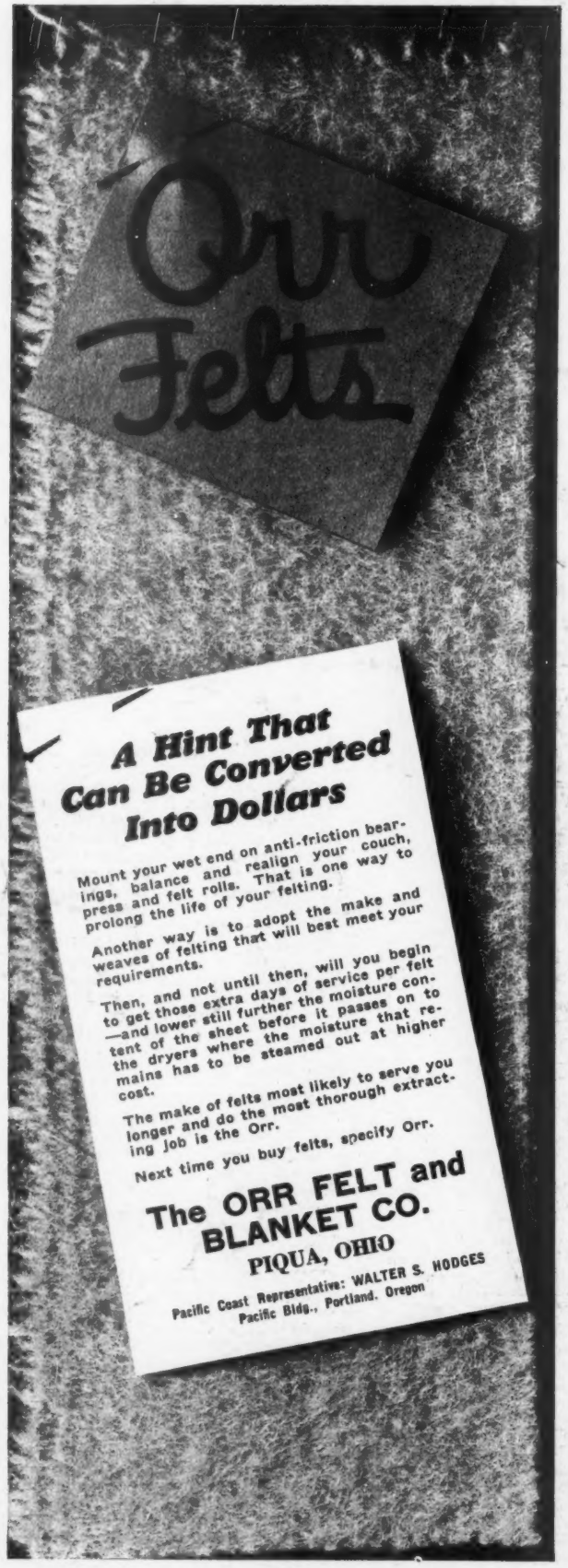
Charles G. Sparrow, from the San Francisco office of the Pacific Coast Paper Mills of Bellingham, arrived in Los Angeles early in April, to spend a few days with S. G. Wilson and Louis Wanka, their Southern California mill agents.

DANIELS VISITS COAST

Arthur B. Daniels, owner of the L. L. Brown Paper Co. of Adams, Mass., reached Los Angeles April 2 on his first coast trip in five years. He spent a week going over matters with his coast representative, Roy A. Swain. The company manufactures high grade ledgers and bonds.

COCHRAN ENTERTAINS FAY

Andrew H. Cochran, San Francisco paper mill representative, had as his guest in March George H. Fay, vice-president of the Mead Sales Co. in charge of the Chicago office. The paper manufacturing firms of Dill & Collins, Inc., and Wheelwright Papers, Inc., which Mr. Cochran represents, are subsidiaries of the Mead Corporation, which also owns the Mead Sales Co. Mr. Fay and his wife came around to the coast through the Panama Canal on the liner 'Santa Eleana" and after spending three days in San Francisco, they hurried east to attend a meeting of the book paper group on April 1.


Orr Felts
A Hint That Can Be Converted Into Dollars
Mount your wet end on anti-friction bearings, balance and realign your couch, press and felt rolls. That is one way to prolong the life of your felting.
Another way is to adopt the make and weaves of felting that will best meet your requirements.
Then, and not until then, will you begin to get those extra days of service per felt —and lower still further the moisture content of the sheet before it passes on to the dryers where the moisture that remains has to be steamed out at higher cost.
The make of felts most likely to serve you longer and do the most thorough extracting Job is the Orr.
Next time you buy felts, specify Orr.
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BOOK PAPER PRICES ADVANCED

The book paper manufacturers were not April fooling when on April first they advanced the price of book paper from $3 to $5 per ton. The raise represents an increase of three to five per cent in prices.

Coated paper prices also went up from $5 to $11 per ton. Shortly before the announced increase the price of soda pulp increased $2 per ton.

Production costs of paper manufacturers have been steadily rising for a long time while paper prices have remained stationary.

FEBRUARY NEWS PRINT STATISTICS

Production in Canada during February 1936 amounted to 221,569 tons and shipments to 206,076 tons, according to the News Print Service Bureau. Production in the United States was 72,252 tons and shipments 70,495 tons, making a total United States and Canadian news print production of 293,821 tons and shipments of 276,571 tons. During February, 24,047 tons of news print were made in Newfoundland and 171 tons in Mexico, so that the total North American production for the month amounted to 318,039 tons. Total production in February 1935 was 277,231 tons.

The Canadian mils produced 67,260 tons more in the first two months of 1936 than in the first two months of 1935, which was an increase of seventeen and six tenths percent. The output in the United States was 711 tons or five tenths of one percent more than for the first two months of 1935, in Newfoundland 2,221 tons or four and two-tenths percent less, and in Mexico 3,467 tons less, making a net increase of 62,283 tons, or ten and six tenths percent.

Stocks of news print paper at Canadian mills were reported at 92,082 tons at the end of February and at United States mills 16,032 tons, making a combined total of 108,114 tons compared with 90,864 tons on January 31, 1936. Considerable tonnage was accumulated at points from which water shipments will be made upon the opening of navigation.

NEW WALDRON EMBOSSING MACHINE CATALOG

A complete catalog of modern converting machinery is the new book describing the full line of Waldron Embossing Machines just issued by the John Waldron Corporation of New Brunswick, New Jersey.

This two color, 20 page book, is a treatise on the art of embossing. It describes the development of embossed effects and the progress made in machine design and construction. With an experience of over 108 years, the Waldron organization has seen the converting industry grow to its present gigantic proportions. Throughout the years, the Waldron line of equipment has kept pace with this forward movement and today it offers equipment to meet every converting need including printing, waxing, gumming, pasting, coating, combining, saturating, impregnating, festooning, slitting, winding, sizing, etc.

This booklet describes the numerous types of embossing machines for every purpose, from applying a watermark to cigarette papers to the embossing of automobile panels, wallboard, artificial leathers, rubberized goods, and similar heavy duty requirements.

Prominently noted are the machines for embossing tin and aluminum foil and the so called quick-change machine which permits rapid change of pattern or design for short runs. Of interest is the two-tone embossing method. Modern improvements in design and construction permit these Waldron Embossing Machines to attain for certain purposes speeds as high as 700 ft. per minute on very wide widths.

The various elements that enter into fine embossing are treated in detail and particular emphasis is placed on paper roll construction and its importance in machine operation and economy. The Waldron Paper Roll is amply described as it forms a part of all Waldron Embossing Machines. This book is fully illustrated and is available to any interested executive. Mr. E. G. Drew, 2860 N. W. Front Ave., Portland, Oregon, represents the John Waldron Corporation on the Coast.

GENERAL ELECTRIC'S IDEA SYSTEM

Employes of the General Electric Company were paid $35,360 in 1935 for new ideas submitted under the suggestion system. This was an increase of $6,142 over 1934. Approximately one-third of all suggestions submitted during the year were adopted. The number submitted was 15,945, compared with 11,438 in 1934; and the number adopted was 5,514, compared with 3,736 in 1934.

Since 1926, when the suggestion system was introduced, more than $500,000 has been paid to employes of the company for new ideas submitted through the suggestion system.